Final Report on the General Avian Inventory at Dinosaur National Monument, Colorado and Utah

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Executive Summary

As part of a new service-wide emphasis on inventory and monitoring, the National Park Service (NPS) developed a Task Agreement with the Rocky Mountain Bird Observatory (RMBO) to conduct an avian inventory of Dinosaur National Monument, in western Colorado and eastern Utah. The inventory was a component of a suite of biological inventories being conducted within the Northern Colorado Plateau Network (NCPN). The objectives of the inventory were (1) to document the occurrence of bird species in the Monument, (2) to describe the distribution and, where possible, the population densities of those species, (3) to identify critical bird habitats in the Monument, (4) to identify bird species of special management concern, and (5) to recommend a long-term bird monitoring program.

To implement the inventory, in 2001 and 2002 I established a series of habitat-stratified point counts and line transects, using distance sampling methodology (Buckland et al. 1993, Leukering et al. 2001), in each of the major habitat types of the Monument (Aspen, Grassland, Mixed Conifer, Piñon-Juniper, Ponderosa Pine, River Riparian, Creek Riparian, Sage Shrubland, and Semi-desert Shrubland). I also surveyed nocturnal bird species by conducting nocturnal point counts along drivable roads in the Monument. I used the program DISTANCE (Thomas et al. 1998) to analyze the distance data and calculate population densities among the different habitat types for those species with sample sizes greater than 19 individual detections. I used the Global Positioning System (GPS) to describe the distribution of each species' detections in the Monument.

In all habitats combined, field workers detected 6141 individual birds of 108 species. Species for which field staff obtained large sample sizes included Black-throated Gray Warbler (n= 575), Spotted Towhee (n = 457), Lazuli Bunting (n = 340), Chipping Sparrow (n = 303), Yellow Warbler (n = 275), and American Robin (n = 251). Field workers detected 47 individual raptors of 14 species, including Ferruginous Hawk, Golden Eagle, Prairie Falcon, and Northern Saw-whet Owl. Species detected in low numbers (n = 1) included Hammond's Flycatcher, Cordilleran Flycatcher, Sage Sparrow, and Indigo Bunting.

Although very limited in the Monument, montane forests boasted the highest overall bird densities of all habitats. Of the three montane habitats, Ponderosa Pine had the greatest overall density of birds (D = 10.143 birds per hectare), followed by Mixed Conifer (D = 9.360 birds per hectare) and Aspen (D = 8.964 birds per hectare). Species diversity was greatest in Piñon-Juniper habitat with 70 species detected; this, however, may have been due to the extent of habitat surveyed. River Riparian, with 58 species detected, and Mixed Conifer, with 54 species detected, were also diverse.

The following species present in the Monument are listed by the Colorado Partners in Flight (COPIF) Land Bird Conservation Plan (Beidleman 2000) as "High Priority" for conservation needs in the Colorado Plateau region: Ferruginous Hawk, Peregrine Falcon, Greater Sage Grouse, Blue Grouse, Burrowing Owl, Mexican Spotted Owl, Common Poorwill, White-throated Swift, Black-chinned Hummingbird, Broad-tailed Hummingbird, Lewis's Woodpecker, Red-naped Sapsucker, Gray Flycatcher, Western Kingbird, Loggerhead Shrike, Gray Vireo, Pinyon Jay, Horned Lark, Violet-green Swallow, Juniper Titmouse, Western Bluebird, Virginia's Warbler, Black-throated Gray Warbler, Brewer's Sparrow, Sage Sparrow, and Scott's Oriole. In order to provide the Monument with management suggestions, I reviewed the COPIF Land Bird Conservation Plan and provide summaries for these species.

Careful monitoring of bird populations is a vital part of identifying changes that could signal trouble for bird species. An advantage of using distance sampling for this inventory is that if funding is arranged to conduct transects and point counts in future years, the inventory can evolve into a monitoring program. In this report I provide detailed directions that will allow for point counts and line transects to be repeated in future years. While this inventory was intensive and may be impractical to repeat annually, conducting a random selection of the total point counts and line transects should suffice for long-term monitoring. It should be noted that a reduction in the number of transects and point counts, however, will result in a reduction of sample size, and in some limited habitats, only the most abundant species would be detected in sufficient numbers to calculate densities. The amount of work to be conducted annually would depend on the objectives of the monitoring program and the funds and personnel available.

Introduction

As part of the NPS Natural Resource Challenge (1999), the Northern Colorado Plateau Inventory and Monitoring Network has identified avian inventory needs at several parks and monuments, including Dinosaur National Monument (hereafter, Monument), in western Colorado and Eastern Utah. A recent review of records indicated that existing information on the avifauna of the Monument varied from good for some habitats to poor for certain specialized habitats. Species presence/absence had not been adequately determined for some species and/or habitats. Lack of such baseline information potentially limits the Monument's ability to develop adequate management guidelines for avian species and their habitats or to adequately protect those species. As part of a new service-wide emphasis on inventory and monitoring, in 2001 the National Park Service (NPS) entered into a task agreement (Agreement RMB-09) with the Rocky Mountain Bird Observatory (RMBO) to conduct an avian inventory in the Monument. The inventory was a component of a suite of biological inventories being conducted within the Northern Colorado Plateau Network. The objectives of the inventory were to:

1) Document through existing, verifiable data and field investigations the occurrence of at least 90 percent of the bird species currently estimated to occur in the Monument;
2) Using systematic surveys, document presence/absence of bird species, and their distribution and qualitative abundance in habitats that were historically under-sampled or not sampled;
3) Identify locations of critical breeding and non-breeding habitats where current records are lacking;
4) Document presence/absence of birds of special management concern that are known or expected to occur in the Monument based on habitat or historic records;
5) Based on the inventory, recommend an effective monitoring program so that Resource Management staff at each park can assess the condition of bird populations over time and detect significant changes in those populations; and
6) Summarize bird information in appropriate formats to contribute to the population of National Park Service databases.

RMBO staff began work during the spring of 2001 and completed the project during the winter of 2002. This report presents the results of their efforts.

Methods

Because it is not possible to count every individual bird present in a given area (a census), I used distance sampling methods to derive an estimate of bird abundance. Distance sampling methods include both line transects and point counts (Buckland et al. 1993). In the case of line transects, an observer walks a transect line and records either the perpendicular distance to each bird heard or seen, or records the sighting angle and distance to the bird. In the case of point counts, an observer stands at a sampling station and records the horizontal distance between the observer and each bird. Line transects are usually more efficient than point counts where they can be conducted because data are continually collected as observers walk the transects, whereas during point counts, birds are counted from single observation points or from points located at intervals along transects (Fancy and Sauer 2000). Point counts are usually preferred in dense, rugged, or hazardous terrain where observers need to watch their footing as they walk transects (Fancy and Sauer 2000).

To survey diurnal bird species, I established a series of habitat-stratified line transects and point counts, using distance sampling methodology (Buckland et al. 1993, Leukering et al. 2001), in each of the major habitat types of the Monument (Aspen, Grassland, Mixed Conifer, Piñon-Juniper, Ponderosa Pine, River Riparian, Creek Riparian, Sage Shrubland, and Semi-desert Shrubland). To survey nocturnal bird species, I established a series of nocturnal point counts along drivable roads in the Monument.

After studying the topography and the distribution of the different habitats in the Monument, I elected to conduct line transects in Grassland, Sage Shrubland, and Semi-desert Shrubland habitats, as these habitats occurred in small patches, were relatively easy to walk through, and I wanted to achieve maximum efficiency. Due to the linear nature of the Riparian habitats, and the necessity of conducting river transects from rafts, I also elected to conduct line transects in River Riparian and Creek Riparian habitats. Piñon-Juniper habitat occurred in large continuous tracts of somewhat dense and difficult terrain, and I elected to conduct point counts there. Aspen, Mixed Conifer, and Ponderosa Pine habitats all occurred in small patches in very steep or rocky terrain, and I elected to conduct point counts in those habitats also. In each habitat, with the exception of the two riparian habitats, I randomly selected the point counts or the starting points of transects by overlaying 7.5-minute USGS topographic maps of the Monument with grids of evenly spaced points (one kilometer between points) and randomly choosing from those points. Field workers ran transects along random bearings where possible (in some situations, topography dictated the direction in which they ran the transects). In River Riparian habitat, field workers started transects at each river mile using a river map (Belknap 1993) to distinguish miles. In Creek Riparian habitat, they sampled practically all habitat of 1000 meters length or greater (see below for habitat descriptions).

Aspen (AS) – I designated habitat as Aspen if the dominant vegetation type was Quaking Aspen (*Populus tremuloides*). Field workers conducted 10 point counts in the Monument's limited Aspen habitat. Nine of those were on the steep eastern slopes of Zenobia Peak and one was in a narrow draw near Deerlodge Park (Appendix A, A1).

Mixed Conifer (MC) – I designated habitat as Mixed Conifer if the dominant vegetation type was Douglas-fir (*Pseudotsuga menziesii*) with intermixed piñon pine (*Pinus edulis*), Utah juniper(*Juniperus utahensis*), and/or Rocky Mountain juniper (*Juniperus scopulorum*). Field workers conducted 60 point counts in Mixed Conifer habitat, all of which were in very steep and hazardous terrain. Most of the counts were clustered on the north-facing cliffs of Split Mountain Gorge, and the steep draws draining into Sand Canyon (Appendix A, A4).

Nocturnal Point Counts (NT) – Field workers conducted 60 nocturnal point counts along drivable roads in the Monument. I arranged the point counts into six transects with points spaced one-half to one mile apart (Appendix A, A16). Observers played pre-recorded tapes of common nocturnal species for that area to elicit responses. Following the playing of a species' call, observers listened for one minute for responses.

Piñon-Juniper (PJ) – I designated habitat as Piñon-Juniper if the dominant vegetation types were piñon pine (*Pinus edulis*), Utah juniper (*Juniperus utahensis*), and/or Rocky Mountain juniper (*Juniperus scopulorum*). Field workers conducted 315 point counts in Piñon-Juniper habitat.

The counts were fairly evenly distributed throughout the Monument and were arranged into 21 transects of 15 points each, with 250 meter intervals (Appendix A, A25).

Ponderosa Pine (PP) – I designated habitat as Ponderosa Pine if the dominant vegetation type was Ponderosa Pine (*Pinus ponderosa*). Field workers conducted 15 point counts in Ponderosa Pine habitat, all of which were on Douglas Mountain (Appendix A, A47).

Riparian (Creek) (RC) – I designated habitat along the Monument's major creeks (Pool Creek, Cub Creek, and Jones Creek), and large stands of riparian habitat along the rivers that field workers were unable to adequately sample from rafts (Deerlodge Park, Gates of Lodore, Echo Park, Green River Campground, Harding Hole, Rainbow Park, Laddie Park) as Creek Riparian. The dominant vegetation type in Creek Riparian habitat was box elder (*Acer negundo*). Field workers conducted 15 transects ranging from 300-1000 meters in length in Creek Riparian habitat (Appendix A, A51).

Riparian (River) (RR) – I designated habitat along the Green and Yampa rivers as River Riparian. Field workers conducted 80 one-mile line transects in River Riparian habitat. They rafted the Yampa River from Deerlodge Park to Echo Park and the Green River from Gates of Lodore to Split Mountain Campground (Appendix A, A63), surveying each river mile (except in stretches of river with rapids). Because of topography along the rivers, I deviated from the standard protocol for line transects in that, instead of walking through the habitat, field workers conducted counts from the raft, measuring perpendicular distances from the center of the rivers to the individual birds.

Shrubland / Grassland (GR, SA, SE) – I designated habitat as Grassland if the dominant vegetation type was any of the various species of grass. Field workers conducted nine line transects of 750 meters length in Grassland habitat (Appendix A, A76). Most Grassland transects were along the Yampa Bench, south of the Yampa River. I designated habitat as Sage Shrubland if the dominant vegetation types were big sagebrush (*Artemisia tridentata*) and/or mountain sagebrush (*Artemisia frigida*). Field workers conducted thirty 750-meter line transects in Sage Shrubland habitat in the Monument. Most of the transects were in the flats along the Yampa Bench, in Zenobia Basin, and in Iron Mine Basin on Douglas Mountain (Appendix A, A76). I designated habitat as Semi-desert Shrubland if the dominant vegetation types were greasewood (*Sarcobatus vermiculatus*), rabbitbrush (*Chrysothamnus* spp.), shadscale (*Amelanchier oreophila*), and four-winged saltbrush (*Atriplex* spp.). Field workers conducted eleven 750-meter line transects in Semi-desert Shrubland habitat in the Monument. All but three of the Semi-desert Shrubland transects were in Utah near the Quarry Visitor Center or near Rainbow and Island parks (Appendix A, A76).

I used the program DISTANCE (Thomas et al. 1998) to analyze distance-estimate data. In this report, all references to density estimates are values provided by DISTANCE and are denoted as "D". The notation, concepts, and analysis methods of the program were developed in Buckland et al. (1993) and Buckland et al. (2001). The program can analyze several forms of distance-sampling data, fitting a detection curve to the data set to be analyzed. The program limits some serious biases inherent in traditional analysis of point-count data (e.g., detectability among habitats or years), but comes with three assumptions: 1) all birds at distance 0 are detected; 2)

distances of birds close to the point or transect line are measured accurately; and 3) birds do not move in response to the observer's presence. I conducted initial analyses of species for which we obtained sample sizes of >19 individuals, examined the data histograms and the detection-function curve fit, and truncated as needed to eliminate outliers. I then conducted the final analyses on the truncated data sets. I should note that I chose a minimum of 20 individuals for analyses in order to include more species in the final analyses. However, 20 individuals may not be a sufficient sample size for statistically significant results (Buckland et al. 1993). In this report, densities of species with low sample sizes (n < 30) should be treated with caution.

To supplement field investigations, I reviewed the Colorado Breeding Bird Atlas (Kingery 1998) and its database, Colorado Birds (Andrews and Righter 1992) and its records, Birds of Western Colorado: Plateau and Mesa Country (Righter et al. in press), Colorado Latilong Study (Chase et al. 1982), Utah Latilong Study (Walters and Sorensen 1983), the Dinosaur National Monument Bird Checklist (Petersburg 2002), and the Natural History Field Observation Cards on file at the Monument.

Results

In all habitats combined, field workers detected 6141 individual birds of 108 species (Table 1). Species for which field staff obtained large sample sizes included Black-throated Gray Warbler (n= 575), Spotted Towhee (n = 457), Lazuli Bunting (n = 340), Chipping Sparrow (n = 303), Yellow Warbler (n = 275), and American Robin (n = 251) (Table 2). Field workers detected 47 individual raptors of 14 species, including Ferruginous Hawk, Golden Eagle, Prairie Falcon, and Northern Saw-whet Owl. Species detected in low numbers (n = 1) included Hammond's Flycatcher, Cordilleran Flycatcher, Sage Sparrow, and Indigo Bunting (Table 2).

Aspen – Field workers detected 137 individual birds of 31 species in Aspen habitat (Table 1). I obtained sufficient sample size to calculate density for only one species, American Robin (D = 2.046 birds per hectare) (Table 3).

Mixed Conifer – Field Workers detected 690 individual birds of 52 species in Mixed Conifer habitat (Table 1). I obtained sufficient sample size to calculate density for nine species, including Chipping Sparrow (D = 1.273 birds per hectare), White-throated Swift (D = 1.147), Black-throated Gray Warbler (D = 1.025), American Robin (D = 0.804 birds per hectare), and Western Tanager (D = 0.243 birds per hectare) (Table 3).

Nocturnal Point Counts – Field workers detected 66 individual birds of four species – Common Poorwill (n = 61), Long-eared Owl (n = 2), Northern Saw-whet Owl (n = 2), and Great Horned Owl (n = 1) – during nocturnal point counts (Table 2). Since field workers were unable to obtain distances during nocturnal point counts, I was unable to calculate density for any of these species.

Piñon-Juniper – Field workers detected 1,962 individual birds of 70 species in Piñon-Juniper habitat (Table 1). I obtained sufficient sample size to calculate density for 22 species, including Black-throated Gray Warbler (D = 0.965 birds per hectare), Gray Flycatcher (D = 0.697 birds per

hectare), Chipping Sparrow (D = 0.696 birds per hectare), Spotted Towhee (D = 0.377 birds per hectare), and Mourning Dove (D = 0.060 birds per hectare) (Table 3).

Ponderosa Pine – Field workers detected 235 individual birds of 37 species in Ponderosa Pine habitat (Table 1). I obtained sufficient sample size to calculate density for three species, American Robin (D = 0.901 birds per hectare), Chipping Sparrow (D = 0.788 birds per hectare), and American Crow (D = 0.126 birds per hectare) (Table 3).

Riparian (River) – Field workers detected 1,146 individual birds of 58 species in River Riparian habitat (Table 1). I obtained sufficient sample size to calculate density for 18 species, including Spotted Towhee (D = 0.270 birds per hectare), Lazuli Bunting (D = 0.098 birds per hectare), Violet-green Swallow (D = 0.068 birds per hectare), Spotted Sandpiper (D = 0.057 birds per hectare), and Yellow Warbler (D = 0.049 birds per hectare) (Table 3).

Riparian (Creek) – Field workers detected 585 individual birds of 40 species in Creek Riparian habitat (Table 1). I obtained sufficient sample size to calculate density for 7 species, including Yellow Warbler (D = 1.476 birds per hectare), Lazuli Bunting (D = 1.169 birds per hectare), House Wren (D = 0.288 birds per hectare), Spotted Towhee (D = 0.219 birds per hectare), and American Robin (D = 0.192 birds per hectare) (Table 3).

Shrubland / Grassland – Field workers detected 213 individual birds of 26 species in Grassland habitat (Table 1). I obtained sufficient sample size to calculate density for three species, Vesper Sparrow (D = 0.542 birds per hectare), Western Meadowlark (D = 0.455 birds per hectare), and Horned Lark (D = 0.202 birds per hectare) (Table 3). Field workers detected 841 individual birds of 48 species in Sage Shrubland habitat (Table 1). I obtained sufficient sample size to calculate density for 12 species, including Brewer's Sparrow (D = 0.557 birds per hectare), Spotted Towhee (D = 0.291 birds per hectare), Green-tailed Towhee (D = 0.230 birds per hectare), Vesper Sparrow (D = 0.176 birds per hectare), and Western Meadowlark (D = 0.113 birds per hectare) (Table 3). Field workers detected 266 individual birds of 37 species in Semi-desert Shrubland habitat (Table 1). I obtained sufficient sample size to calculate density for four species, Lark Sparrow (D = 0.472 birds per hectare), Brewer's Sparrow (D = 0.225 birds per hectare), Lazuli Bunting (D = 0.109 birds per hectare), and Western Meadowlark (D = 0.105 birds per hectare) (Table 3).

I revised the Dinosaur National Monument bird checklist to include 285 species (Appendix C). In addition to the 121 species that were detected by field workers during the inventory (108 by formal surveys and 13 by casual observations), 11 are documented in the Colorado Breeding Bird Atlas, 79 are confirmed records in the Natural History Observation Cards at the Monument, 18 are unconfirmed records in the observation cards, five are false reports in the observation cards, one is a museum specimen, and 50 are listed as "Probably Present" (those species that have been documented in areas bordering the Monument).

Discussion

Documentation of 90 percent of the bird species currently expected to occur in the Monument – Of the 285 species on the revised checklist of Dinosaur National Monument birds (Appendix C),

212 species are listed as "Present in Park", 18 are listed as "Unconfirmed", 50 are listed as "Probably in Park", and 5 are listed as "False Reports". Species listed as "Present in Park" account for 74% of the total list. While this inventory documents nearly all of the breeding birds expected to occur in the Monument (146 of the 147 expected breeders were confirmed), documentation of migratory species was more difficult. Of the 91 species listed as "Migratory", I confirmed 44 (48%). Because of the unpredictable behavior of migratory birds, their presence in any area can be erratic. Many migratory species expected to occur in the Monument (listed as "Probably Present") were included based on their occurrences in neighboring areas (Bryant 1997) and the fact that publications (Andrews and Righter 1992, Righter et al. in press) suggest their possible occurrences. Most of these species are waterfowl or other wetland species that regularly occur in Browns Park National Wildlife Refuge and more than likely follow the Green River downstream into the Monument. Occurrences of these species are hypothetical and do not indicate that the species will actually occur in the Monument. Documentation of migratory species is always an ongoing process, and it may take many years to confirm some of these species. Some of them may never be confirmed, and some species that have occurred in the Monument historically may never occur there again (many species wander far form their normal migratory ranges). The confirmation of these species will, therefore, be dependent upon Monument personnel and visitors submitting Natural History Field Observation Cards. I recommend that Monument personnel familiarize themselves with the checklist and submit cards for possible sightings of species listed as "Probably Present" and "Unconfirmed". I also recommend posting a list of these species at interpretive sites and boat launch and take-out areas with an explanation of the importance of documenting the species. Many skilled birders visit the Monument, and they are valuable assets. Photographs of the birds should accompany field observation cards; however, since photographing birds is often difficult, all cards should include at least detailed descriptions of the birds' identification marks, behaviors, and anything else that may aid in their identification.

Documentation of the distribution and abundance of bird species in the Monument –
The distribution maps in Appendix B provide visual representations of the distribution of detections of each species in the Monument and the habitats associated with those detections. The maps depict only those species detected during point counts and transects. It should be noted that the maps do not depict the overall distribution of the species, as many species are sure to occur in areas that field workers did not survey, or were present but not detected in areas that they did survey. Species such as Spotted Towhee, Black-throated Gray Warbler, and Chipping Sparrow, with wide distributions in several different habitat types, may be considered as generalists in respect to their habitat needs in the Monument. Species such as Gray Vireo, Cassin's Finch, and Dusky Flycatcher, with limited distributions within few habitat types, may be considered more specialized in respect to their habitat needs in the Monument. The density graphs included with each map provide detail on the habitat associations of each species.

Identification of locations of critical breeding and non-breeding bird habitats –
Although very limited in the Monument, montane forests boasted the highest overall bird densities of all habitats (Table 4). Of the three montane habitats, Ponderosa Pine had the greatest overall density of birds (D = 10.143 birds per hectare), followed by Mixed Conifer (D = 9.360 birds per hectare) and Aspen (D = 8.964 birds per hectare) (Table 4). Density was lowest in River Riparian habitat (D = 0.483 birds per hectare) (Table 4); this, however, was likely due to

the fact that there were near-vertical canyon walls, and thus very little suitable bird habitat along many of the river miles surveyed. Species diversity was greatest in Piñon-Juniper habitat with 70 species detected (Table 2); this, however, may have been due to the extent of habitat surveyed. River Riparian, with 58 species detected, and Mixed Conifer, with 54 species detected, were also diverse (Table 2). Aspen and Semi-desert Shrubland had the lowest species diversities, with 31 and 38 species detected, respectively (Table 2). Low species diversity in Aspen may have been a factor of the limited amount of habitat present in the Monument. The limited distribution of the montane habitats in the Monument may make them vulnerable to loss due to fire, disease, insect infestation, or other natural or human causes. Given the high bird densities in these habitats, they should be monitored carefully so that they continue in the Monument. The same applies to the rich riparian box elder and cottonwood habitats including Island Park, Rainbow Park, Cub Creek, Pool Creek, Echo Park, Deerlodge Park, and all of the river parks.

The proliferation of Piñon-Juniper habitat may pose a threat to other limited habitats in the Monument. Piñon-Juniper woodlands have expanded over the last 150 years in the West, and now cover areas hundreds of miles north and south of earlier habitats (Monson et al. 1999). Piñons and junipers have become established in and dominated new communities, expanded to both higher and lower elevations, and increased in densities and canopy cover (Monson et al. 1999). While I made no attempt to quantify this in the Monument, my selection of Sage Shrubland habitats made it clear that some advancement of Piñon-Juniper has occurred. I used the 1965 USGS 7.5-minute quad maps of the Monument to identify areas not covered by trees (not green on the maps), and then visited those areas to identify Grassland, Sage Shrubland, and Semi-desert Shrubland habitats. Many of the smaller areas mapped as non-forested in 1965 are now covered by sparse Piñon-Juniper woodland. If there is a trend toward Piñon-Juniper encroachment, much of the Monument's Grassland, Sage Shrubland, and Semi-desert Shrubland habitat may be lost. This loss would, in turn, negatively affect bird species such as Greater Sage Grouse, Horned Lark, Brewer's Sparrow, Vesper Sparrow, and Sage Sparrow, to mention a few that are dependent upon these habitats.

Documenation of the presence/absence of birds of special management concern – A summary of bird inventory and monitoring projects in the Monument (Petersburg 2000) lists several species as being of "management interest." Among these are Ferruginous Hawk, Peregrine Falcon, and Burrowing Owl. The Colorado Partners in Flight (COPIF) Land Bird Conservation Plan (Beidleman 2000) lists the following species, all of which were either detected during our surveys or were historically detected in the Monument, as "High Priority" for conservation needs in the Colorado Plateau region: Ferruginous Hawk, Peregrine Falcon, Greater Sage Grouse, Blue Grouse, Burrowing Owl, Mexican Spotted Owl, Common Poorwill, White-throated Swift, Black-chinned Hummingbird, Broad-tailed Hummingbird, Lewis's Woodpecker, Red-naped Sapsucker, Gray Flycatcher, Western Kingbird, Loggerhead Shrike, Gray Vireo, Pinyon Jay, Horned Lark, Violet-green Swallow, Juniper Titmouse, Western Bluebird, Virginia's Warbler, Black-throated Gray Warbler, Brewer's Sparrow, Sage Sparrow, and Scott's Oriole. In order to provide the Monument with management suggestions, I reviewed the COPIF Land Bird Conservation Plan and provide summaries for these species in Appendix D.

Based on the number of "High Priority" bird species that inhabit the area, I recommend that the Monument be nominated for recognition as a National Audubon Society Important Bird Area (IBA). The IBA program recognizes sites that provide essential habitat to one or more bird species during breeding season, migration, or winter. The program draws on science-based criteria to identify and conserve a network of key habitats for birds. The recognition of a site does not confer any legal or regulatory status, and is voluntary on the part of the land manager. The Monument meets the following IBA nomination criteria (National Audubon Society 2000): Because of the presence of wintering Bald Eagles, the Monument meets Criteria 1 (sites important to endangered or threatened species in Colorado); the presence of significant breeding populations of Peregrine Falcon, Northern Sage Grouse, Northern Pygmy Owl, Common Poorwill, American Dipper, Gray Flycatcher, Juniper Titmouse, Gray Vireo, Virginia's Warbler, Black-throated Gray Warbler, and Western Tanager, meets Criteria 2 of the plan (sites important to species of high conservation priority in Colorado); the presence of large, undisturbed areas of Piñon-Juniper and Cliff-Rock habitats meets criteria 3 of the plan (sites that contain rare or unique habitat or an exceptional representative of a natural habitat); and, the ongoing Peregrine Falcon and Fire Effects studies meet criteria 5 (sites important for long-term research and/or monitoring projects).

Recommendation of an effective monitoring program – Careful monitoring of bird populations is a vital part of identifying changes that could signal trouble for species. Although several monitoring methods are available, distance sampling has been used for more than 30 years to estimate the population densities of animals and is, in most situations, considered the best method for determining relative population densities or trends for most bird species (Buckland et al. 1993, Fancy and Sauer 2000). For a detailed history and description of distance sampling and its use in the National Parks, see Fancy and Sauer (2000). An advantage of using distance sampling for this inventory is that if funding is arranged to conduct transects and point counts in future years, the inventory can evolve into a monitoring program. Appendix A provides detailed directions that will allow for point counts and line transects to be repeated in future years. While this inventory was intensive and may be impractical to repeat annually, conducting a random selection of the total point counts and line transects should suffice for long-term monitoring. It should be noted that a reduction in the number of transects and point counts, however, will result in a reduction of sample size, and in some limited habitats, only the most abundant species would be detected in sufficient numbers to calculate densities. The amount of work to be conducted annually would depend on the objectives of the monitoring program and the funds and personnel available.

Summarization of bird information in the National Park Service databases – All of the data (raw and electronic) collected during this inventory are on file at the National Park Service – Northern Colorado Plateau Network.

Acknowledgments

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Table 1. Number of survey units (line transects or point counts) in each habitat with totals of species and individuals detected in Dinosaur National Monument.

Habitat	# survey units	# species detected	# individuals
Aspen	10 point counts	31	137
Grassland	(9) 750-meter line transects	26	213
Mixed Conifer	60 point counts	52	690
Nocturnal	60 point counts	4	66
Piñon-Juniper	315 point counts	70	1,962
Ponderosa Pine	15 point counts	37	235
River Riparian	80 one-mile line transects	58	1,146
Creek Riparian	16 one-kilometer line transects	40	585
Sage Shrubland	(30) 750-meter line transects	48	841
Semi-desert Shrubland	(11) 750-meter line transects	37	266
Totals (10 habitats)	606	108	6,141

Table 2. Birds detected during the General Avian Inventory at Dinosaur National Monument, 2001-2002. n = number of individual birds detected; k = number of survey units in which that species was detected. AS = Aspen habitat; GR = Grassland habitat; MC = Mixed Conifer habitat; NT = Nocturnal surveys; PJ = Piñon-Juniper habitat; PP = Ponderosa Pine habitat; RR = River Riparian habitat; RC = Creek Riparian habitat; SA = Sage Shrubland habitat; SE = Semi-desert Shrubland habitat; All = all habitats combined.

Species	AS		GR		MC		NT		PJ		PP		RR		RC		SA		SE		All	
	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	K
Western Grebe													1	1							1	1
Great Blue Heron													4	2							4	2
Turkey Vulture					2	2					7	2	8	6			2	1			19	11
Canada Goose			2	1					6	4			31	17	2	1	2	1	1	1	44	25
Gadwall													3	2							3	2
Mallard									2	1			21	4							23	5
Common Merganser													13	10							13	10
Osprey													1	1							1	1
Northern Harrier															2	1	1	1			3	2
Cooper's Hawk									1	1			4	3	2	2					7	6
Red-tailed Hawk					4	3			2	2			2	2			1	1	1	1	10	9
Ferruginous Hawk			1	1																	1	1
Golden Eagle									1	1			6	6	2	2			3	2	12	11
American Kestrel			1	1					3	3	3	2	6	3			1	1	1	1	15	11
Prairie Falcon											1	1									1	1
Peregrine Falcon					1	1			3	3			1	1							5	5
Chukar											1	1									1	1
Greater Sage Grouse					1	1											1	1			2	2
Killdeer													1	1							1	1
Spotted Sandpiper													106	49	3	3					109	52
Mourning Dove			5	2	6	5			96	80	4	2	21	12	8	4	27	11	12	8	179	124
Northern Pygmy-Owl									2	2											2	2
Great Horned Owl							1	1													1	1
Long-eared Owl							2	2													2	2
Northern Saw-whet Owl							2	2													2	2
Common Poorwill							61	29													61	29
White-throated Swift					79	26			20	23	6	3	33	21	5	5	8	2	4	3	155	83
Black-chinned Hummingbird									2	2			4	3							6	5
Broad-tailed Hummingbird	1	1			5	5			21	20	3	3	1	1			5	5			36	35
Red-naped Sapsucker	2	2																			2	2
Downy Woodpecker					1	1															1	1
Hairy Woodpecker	1	1			5	5			2	2	1	1									9	9
Red-shafted Flicker	1	1			4	4			14	14	3	3	6	4	1	1	3	3			32	30
Olive-sided Flycatcher					1	1			1	1											2	2
Western Wood-Pewee					1	1			2	2	4	4			3	3					10	10
Hammond's Flycatcher					1	1															1	1
Dusky Flycatcher	3	3			4	3			1	1	1	1									9	8
Gray Flycatcher			2	1	5	5			204	155							27	10			238	171

Table 2 continued.

Species	AS		GR		MC		NT		PJ		PP		RR		RC		SA		SE		ALL	
	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k
Cordilleran Flycatcher													1	1							1	1
Say's Phoebe					2	2			14	14			71	39	3	2	10	8	7	5	107	70
Ash-throated Flycatcher			2	1	5	3			80	70			9	7	5	4	3	3	3	3	107	91
Western Kingbird									3	2			2	2	2	1			2	2	9	7
Gray Vireo									17	17											17	17
Plumbeous Vireo					18	16			47	44			10	10	9	5	3	3			87	78
Warbling Vireo	14	8			6	6			2	2	8	5			7	3					37	24
Steller's Jay	1	1			1	1					1	1	5	4			1	1			9	8
Western Scrub-Jay			1	1	4	4			59	50	1	1	2	2	1	1	2	2			70	61
Pinyon Jay			3	2					34	42							14	8	2	1	53	53
Clark's Nutcracker	9	3			3	3			8	7	5	2	1	1							26	16
Black-billed Magpie	2	1	1	1					4	3	10	1	24	7	8	3	4	2	7	4	60	22
American Crow											30	1									30	1
Common Raven			2	2	10	8			18	16	1	1	4	3	2	2	10	6	1	1	48	39
Horned Lark			21	3													3	1	1	1	25	5
Violet-green Swallow	5	3			43	19			8	13	1	1	85	45	16	8			9	3	167	92
Northern Rough-winged Swallow									1	1			3	2							4	3
Cliff Swallow									2	2			21	12	1	1	8	2			32	17
Barn Swallow			1	1					1	1											2	2
Black-capped Chickadee					1	1			12	11					1	1					14	13
Mountain Chickadee	2	2			13	10			4	4											19	16
Juniper Titmouse			2	2					51	42							5	4			58	48
Bushtit					8	2			5	6			1	2							14	10
Red-breasted Nuthatch	3	3			7	6			2	2	3	3									15	14
White-breasted Nuthatch									16	15											16	15
Rock Wren	1	1	2	1	5	5			53	43	5	2	38	17	1	1	14	9	12	6	131	85
Canyon Wren					1	1			4	3			23	13	2	2					30	19
Bewick's Wren									8	8										2	8	10
House Wren	19	8			23	15			2	2	6	5	5	3	26	7	2	2	1	1	84	43
American Dipper													12	10	5	5					17	15
Ruby-crowned Kinglet	1	1			4	4					1	1									6	6
Blue-gray Gnatcatcher			3	1	14	8			89	74			10	5	6	4	26	14	9	3	157	109
Mountain Bluebird	4	2	5	2	9	6			34	26	3	3					24	12	2	1	81	52
Townsend's Solitaire					4	3			1	1											5	4
Hermit Thrush	5	4			13	10					1	1									19	15
American Robin	27	8			72	26			48	40	34	11	21	12	25	8	21	11	3	3	251	119
Northern Mockingbird			1	1					1	1									1	1	3	3
Sage Thrasher									3	3											3	3

Table 2 continued.

Species	AS		GR		MC		NT		PJ		PP		RR		RC		SA		SE		ALL	
	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k	n	k
European Starling													1	1	4	1	12	1			17	3
Virginia's Warbler	2	2			13	11			11	11	1	1					6	3			33	28
Yellow Warbler	1	1			4	2			4	4			108	46	150	16	5	3	3	2	275	74
Audubon's warbler	11	7			8	8			9	9	11	4					1	1			40	29
Black-throated Gray Warbler	1	1	1	1	89	49			377	241	11	7	52	33	5	5	39	16			575	353
MacGillivray's Warbler					3	2															3	2
Yellow-breasted Chat	1	1							9	9			31	16	20	8	5	2	3	2	69	38
Western Tanager					45	35			12	12	7	7					1	1			65	55
Green-tailed Towhee	5	5	2	1	21	15			20	18	13	6					70	11	2	1	133	57
Spotted Towhee	2	2	4	2	30	20			179	129	13	4	81	34	49	13	87	19	12	5	457	228
Chipping Sparrow	3	3	6	3	49	27			153	121	21	5	3	3	15	5	50	16	3	1	303	184
Brewer's Sparrow	1	1	4	3	1	1			12	9							143	23	20	8	181	45
Vesper Sparrow			53	9					30	27							68	23	14	8	165	67
Lark Sparrow			9	2					10	8			2	2			19	12	41	10	81	34
Black-throated Sparrow									1	1							3	3	10	4	14	8
Sage Sparrow																	1	1			1	1
Savannah Sparrow									3	3											3	3
Song Sparrow									1	1			60	24	15	8	1	1			77	34
Gray-headed Junco	6	5			9	2					2	2									17	9
Black-headed Grosbeak									4	4	1	1	1	1	2	1					8	7
Blue Grosbeak									1	1			8	8							9	9
Lazuli Bunting	1	1			6	3			30	23			147	49	120	14	15	6	21	6	340	102
Indigo Bunting													1	1							1	1
Red-winged Blackbird													3	2							3	2
Western Meadowlark			77	9					26	24	9	2	3	3	3	2	67	12	36	10	221	62
Brewer's Blackbird															2	1			1	1	3	2
Brown-headed Cowbird									21	17			2	2	3	3	6	2	2	2	34	26
Bullock's Oriole													3	1	11	2	2	1	1	1	17	5
Cassin's Finch	1	1			16	11					2	1									19	13
House Finch			2	1	4	3			28	20			13	6	16	7	12	8	12	5	87	50
Pine Siskin	1	1			6	3			9	11											16	15
Lesser Goldfinch													6	4	23	7					29	11

Table 3. Results of DISTANCE analysis for species with sample sizes >19 in individual habitats at Dinosaur National Monument. n=untruncated sample size; D=density estimate, expressed as individuals per hectare (from program DISTANCE); CI=95% confidence intervals of density estimate; CV(%)=percent coefficient of variation of the density estimate.

Species	Habitat	n	D	CI	CV(%)
Canada Goose	Riparian (river)	31	0.028	0.016 - 0.050	29.8
Spotted Sandpiper	Riparian (river)	106	0.057	0.044 - 0.074	13.3
Mourning Dove	Piñon-Juniper	96	0.060	0.044 - 0.081	15.6
Mourning Dove	Riparian (river)	21	0.006	0.003 - 0.012	36.9
Mourning Dove	Sage	27	0.022	0.011 - 0.047	37.5
White-throated Swift	Mixed Conifer	79	1.147	0.708 - 1.857	24.7
White-throated Swift	Piñon-Juniper	20	0.055	0.023 - 0.131	44.1
White-throated Swift	Riparian (river)	33	0.011	0.005 - 0.025	43.2
Broad-tailed Hummingbird	Piñon-Juniper	21	0.049	0.028 - 0.083	27.7
Gray Flycatcher	Piñon-Juniper	204	0.697	0.580 - 0.836	9.3
Gray Flycatcher	Sage	27	0.080	0.042 - 0.154	33.2
Say's Phoebe	Riparian (river)	71	0.046	0.033 - 0.065	17.4
Ash-throated Flycatcher	Piñon-Juniper	80	0.085	0.059 - 0.121	18.2
Plumbeous Vireo	Piñon-Juniper	47	0.088	0.047 - 0.165	32.2
Western Scrub-Jay	Piñon-Juniper	59	0.122	0.078 - 0.158	18.1
Pinyon Jay	Piñon-Juniper	34	0.028	0.016 - 0.051	30.2
Black-billed Magpie	Riparian (river)	24	0.006	0.003 - 0.015	43.7
American Crow	Ponderosa Pine	30	0.126	0.021 - 0.750	100
Horned Lark	Grassland	21	0.202	0.051 - 0.794	70.4
Violet-green Swallow	Mixed Conifer	43	0.772	0.451 - 1.320	27.5
Violet-green Swallow	Riparian (river)	85	0.068	0.044 - 0.105	22.0
Cliff Swallow	Riparian (river)	21	0.008	0.003 - 0.018	45.3
Juniper Titmouse	Piñon-Juniper	51	0.189	0.124 - 0.287	21.5
Rock Wren	Piñon-Juniper	53	0.035	0.022 - 0.055	23.3
Rock Wren	Riparian (river)	38	0.015	0.008 - 0.030	33.9
Canyon Wren	Riparian (river)	23	0.007	0.004 - 0.012	31.2
House Wren	Mixed Conifer	23	0.174	0.101 - 0.299	27.8
House Wren	Riparian (creek)	26	0.288	0.108 - 0.763	49.6
Blue-gray Gnatcatcher	Piñon-Juniper	89	0.700	0.510 - 0.960	16.0
Blue-gray Gnatcatcher	Sage	26	0.134	0.076 - 0.235	28.6
Mountain Bluebird	Piñon-Juniper	34	0.029	0.017 - 0.047	25.5
Mountain Bluebird	Sage	24	0.051	0.026 - 0.100	34.6
American Robin	Aspen	27	2.046	0.955 - 4.383	38.1
American Robin	Mixed Conifer	72	0.804	0.464 - 1.394	28.2
American Robin	Piñon-Juniper	48	0.022	0.014 - 0.034	22.9
American Robin	Ponderosa Pine	34	0.901	0.432 - 1.881	37.4
American Robin	Riparian (river)	21	0.016	0.007 - 0.039	46.0
American Robin	Riparian (creek)	25	0.192	0.062 - 0.595	57.8
American Robin	Sage	21	0.053	0.027 - 0.104	34.1
Yellow Warbler	Riparian (river)	108	0.049	0.037 - 0.066	14.7
Yellow Warbler	Riparian (creek)	150	1.476	1.009 - 2.158	19.0
Black-throated Gray Warbler	Mixed Conifer	89	1.025	0.773 - 1.359	14.4
Black-throated Gray Warbler	Piñon-Juniper	377	0.965	0.824 - 1.130	8.06
Black-throated Gray Warbler	Riparian (river)	52	0.021	0.012 - 0.038	29.2
Black-throated Gray Warbler	Sage	39	0.083	0.045 - 0.153	31.3
Yellow-breasted Chat	Riparian (river)	31	0.007	0.004 - 0.014	34.1

Table 3 continued.

Species	Habitat	N	D	CI	CV(%)
Yellow-breasted Chat	Riparian (creek)	20	0.205	0.101 - 0.415	35.0
Western Tanager	Mixed Conifer	45	0.243	0.155 - 0.382	23.0
Green-tailed Towhee	Mixed Conifer	21	0.153	0.080 - 0.296	33.7
Green-tailed Towhee	Piñon-Juniper	20	0.026	0.013 - 0.050	34.1
Green-tailed Towhee	Sage	70	0.230	0.113 - 0.468	36.0
Spotted Towhee	Mixed Conifer	30	0.320	0.176 - 0.584	30.9
Spotted Towhee	Piñon-Juniper	179	0.377	0.304 - 0.467	10.9
Spotted Towhee	Riparian (river)	81	0.270	0.016 - 0.044	25.4
Spotted Towhee	Riparian (creek)	49	0.219	0.121 - 0.398	28.8
Spotted Towhee	Sage	87	0.291	0.165 - 0.511	29.0
Chipping Sparrow	Mixed Conifer	49	1.273	0.690 - 2.349	31.5
Chipping Sparrow	Piñon-Juniper	153	0.696	0.558 - 0.869	11.3
Chipping Sparrow	Ponderosa Pine	21	0.788	0.258 - 2.406	58.0
Chipping Sparrow	Sage	50	0.152	0.086 - 0.266	28.6
Brewer's Sparrow	Sage	143	0.557	0.386 - 0.805	18.2
Brewer's Sparrow	Semi-desert	20	0.225	0.074 - 0.684	54.6
Vesper Sparrow	Grassland	53	0.542	0.298 - 0.985	26.9
Vesper Sparrow	Piñon-Juniper	30	0.031	0.019 - 0.049	24.7
Vesper Sparrow	Sage	68	0.176	0.118 - 0.261	19.9
Lark Sparrow	Sage	20	0.048	0.027 - 0.087	30.1
Lark Sparrow	Semi-desert	41	0.472	0.275 - 0.810	26.0
Song Sparrow	Riparian (river)	60	0.025	0.014 - 0.044	29.3
Lazuli Bunting	Piñon-Juniper	30	0.036	0.022 - 0.058	24.8
Lazuli Bunting	Riparian (river)	147	0.098	0.058 - 0.166	27.1
Lazuli Bunting	Riparian (creek)	120	1.169	0.827 - 1.651	16.8
Lazuli Bunting	Semi-desert	21	0.109	0.109 - 0.501	36.4
Western Meadowlark	Grassland	77	0.455	0.298 - 0.695	19.4
Western Meadowlark	Piñon-Juniper	26	0.016	0.008 - 0.032	37.6
Western Meadowlark	Sage	67	0.113	0.065 - 0.198	27.9
Western Meadowlark	Semi-desert	36	0.105	0.061 - 0.181	26.2
Brown-headed Cowbird	Piñon-Juniper	21	0.024	0.013 - 0.045	33.1
House Finch	Piñon-Juniper	28	0.067	0.039 - 0.116	28.3
Lesser Goldfinch	Riparian (creek)	23	0.216	0.072 - 0.646	56.1

Table 4. Results of DISTANCE analysis for all species combined among the different habitat types surveyed in Dinosaur National Monument. n=sample size; D=density estimate, individuals per hectare (from program DISTANCE); CI=95% confidence intervals of density estimate; CV(%)=percent coefficient of variation of the density estimate.

Habitat	N	D	CI	CV(%)
Aspen	137	8.964	7.457 – 10.775	9.1
Grassland	213	1.452	1.114 – 1.843	10.7
Mixed Conifer	690	9.360	7.851 – 11.160	8.9
Piñon-Juniper	1962	4.896	4.487 – 5.342	4.5
Ponderosa	235	10.143	6.122 – 16.805	24.3
River Riparian	1146	0.483	0.397 – 0.588	10.0
Creek Riparian	585	5.348	3.889 – 7.354	15.2
Sage Shrubland	841	2.154	1.793 – 2.587	9.3
Semi-desert Shrubland	266	2.228	1.637 – 3.033	14.1

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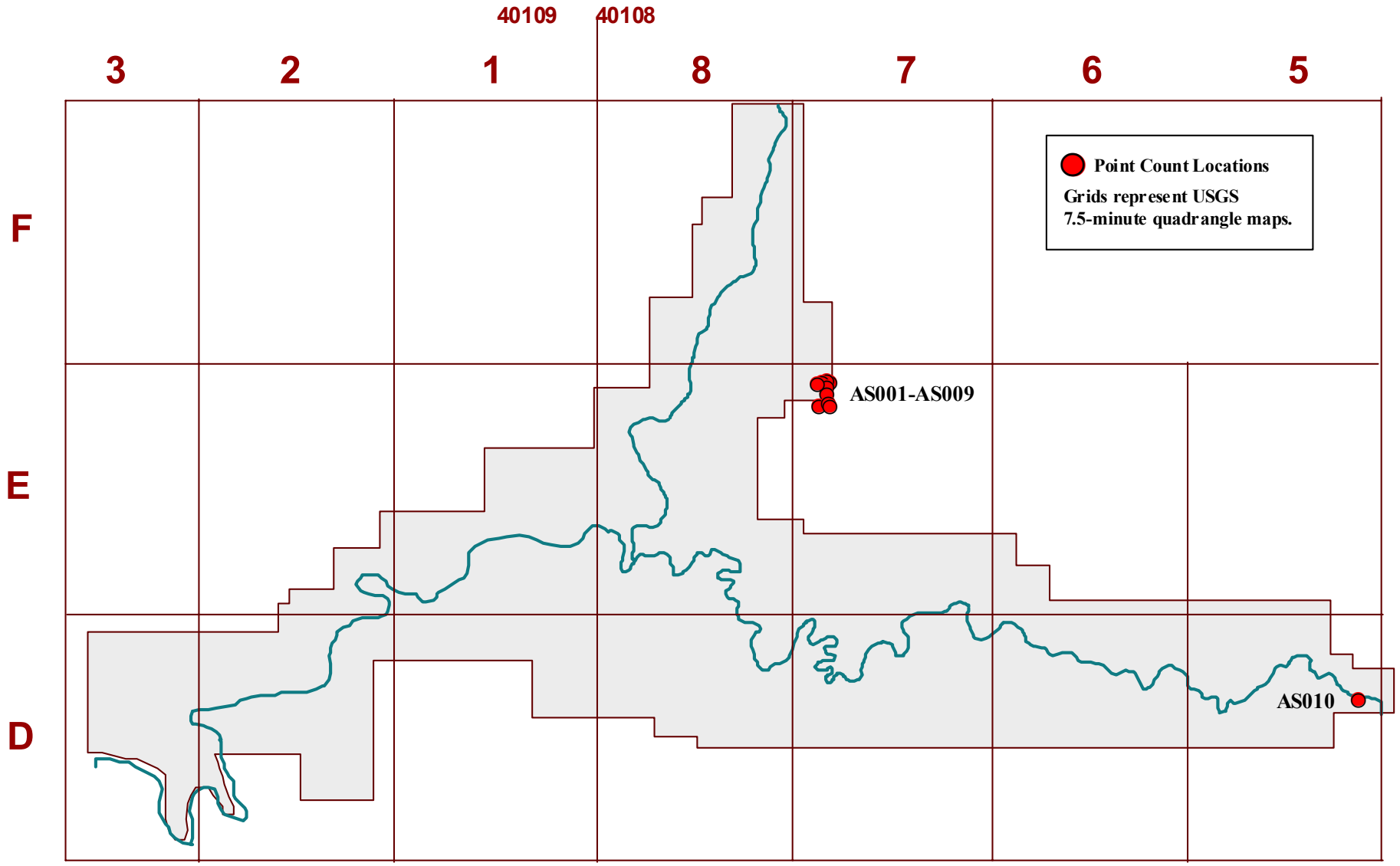
Appendix A. Point Count and Transect Locations and Descriptions.

Aspen Point Counts

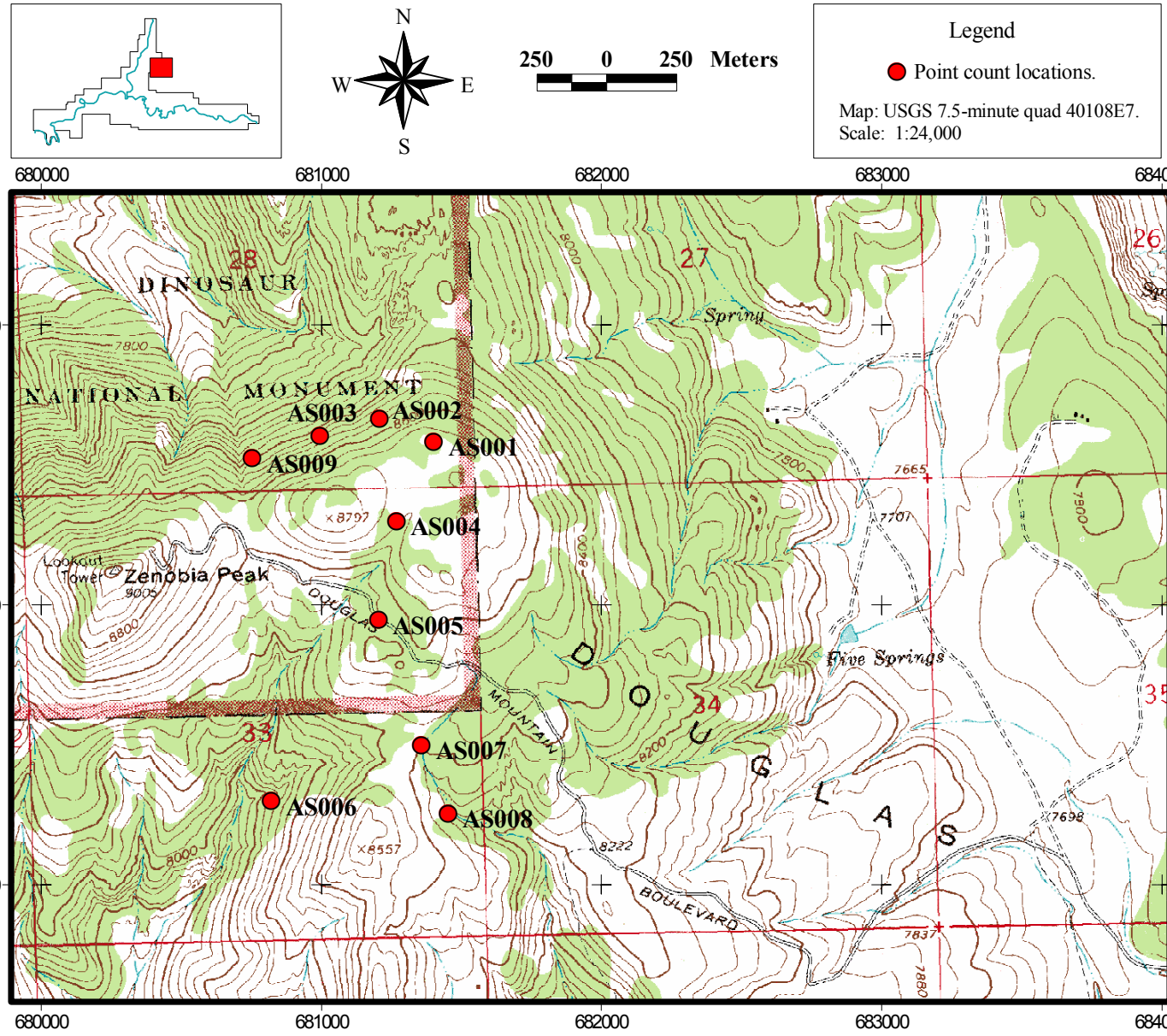


Index to Aspen point counts.

Points AS001-AS009.
Access is near Zenobia Peak on the Douglas Mountain Boulevard. Start at the Monument's boundary just east of Zenobia Peak. Walk north along the boundary along easy slopes to reach a steep drop-off near USGS point 8797. Points AS001-AS003 are along the steep slope in the old burned / new aspen forest and are 250 meters apart. Point AS009 is 250 meters west of point AS003. Point AS004 is at the upper reaches of Little Joe Draw. Point AS005 is on the Douglas Mountain Boulevard Road. Points AS006-AS008 are along a dirt two-track road leading out of Little Joe Draw.

UTM locations of AS001-AS009 observation points:

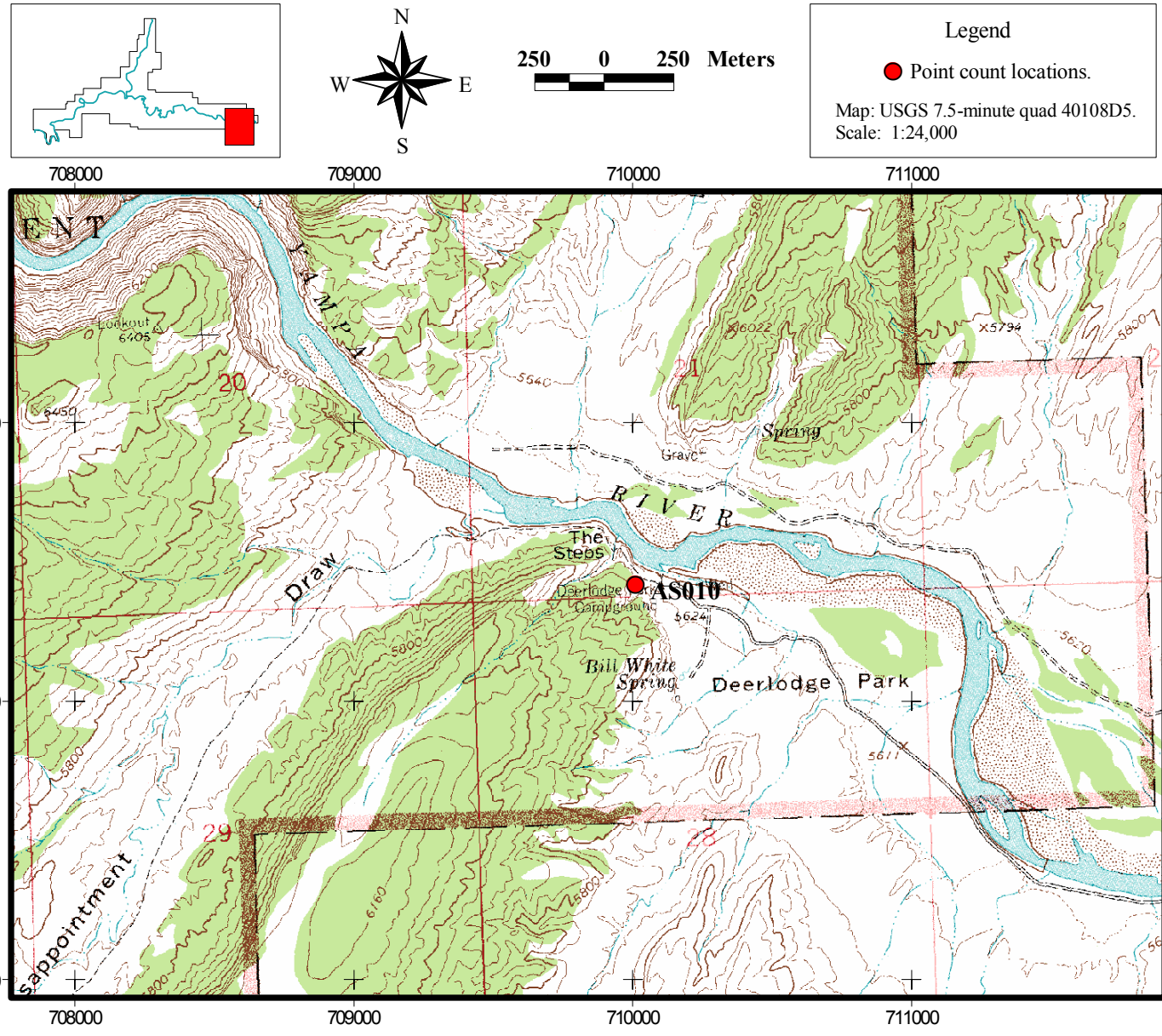
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
AS001	12T	681401	4497582	AS006	12T	680822	4496299
AS002	12T	681208	4497666	AS007	12T	681357	4496498
AS003	12T	680996	4497605	AS008	12T	681453	4496254
AS004	12T	681268	4497299	AS009	12T	680753	4497523
AS005	12T	681205	4496945				



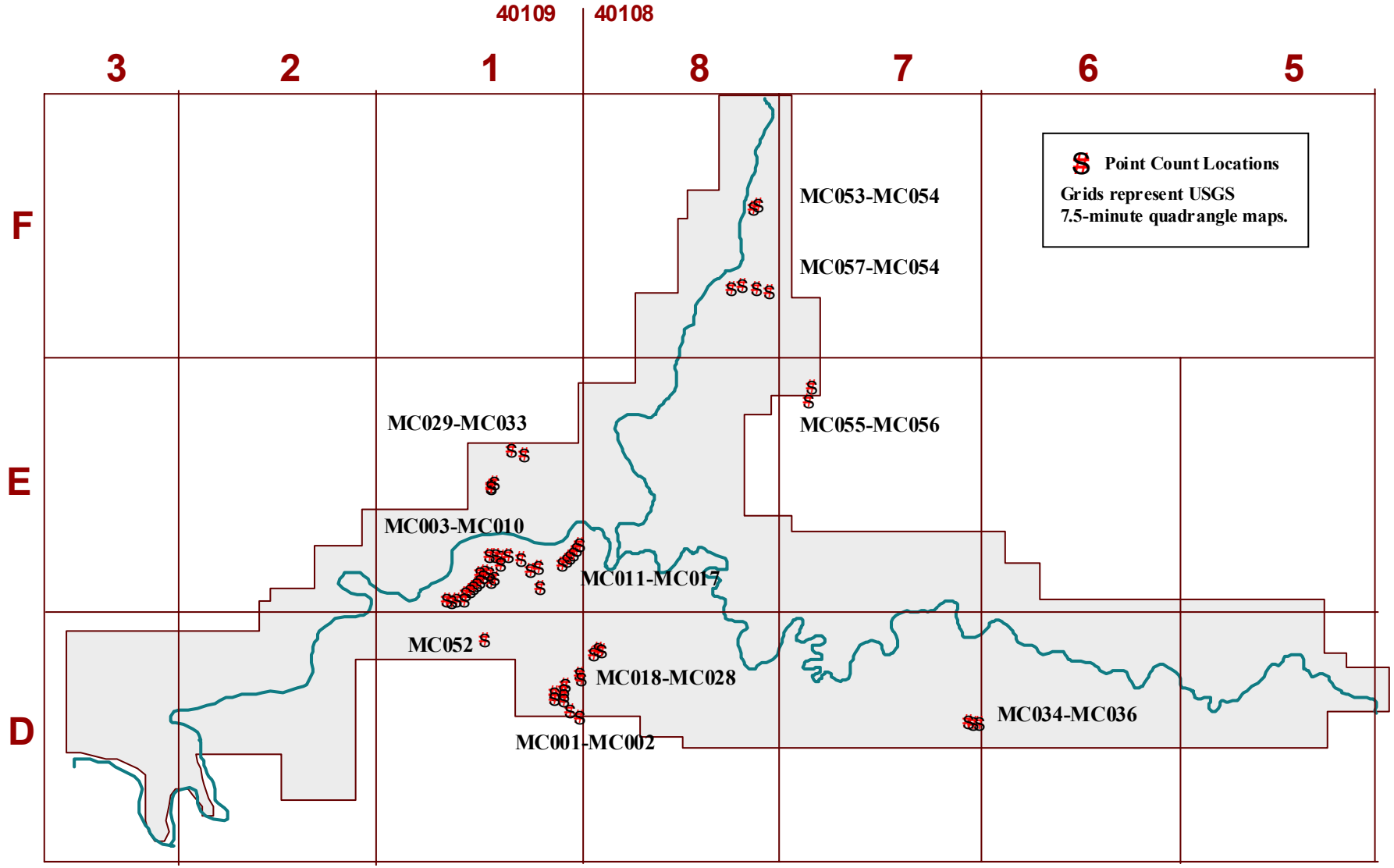
Point AS010.
Access is at Deerlodge Park at the end of the paved road leading past the campground. The point is just south of the parking area with only 4-5 aspen trees in a little slot canyon (the only aspen to be found in the area).

UTM locations of AS010 observation point:

Point	Zone	Easting	Northing
AS010	12T	710011	4480418



Mixed Conifer Point Counts

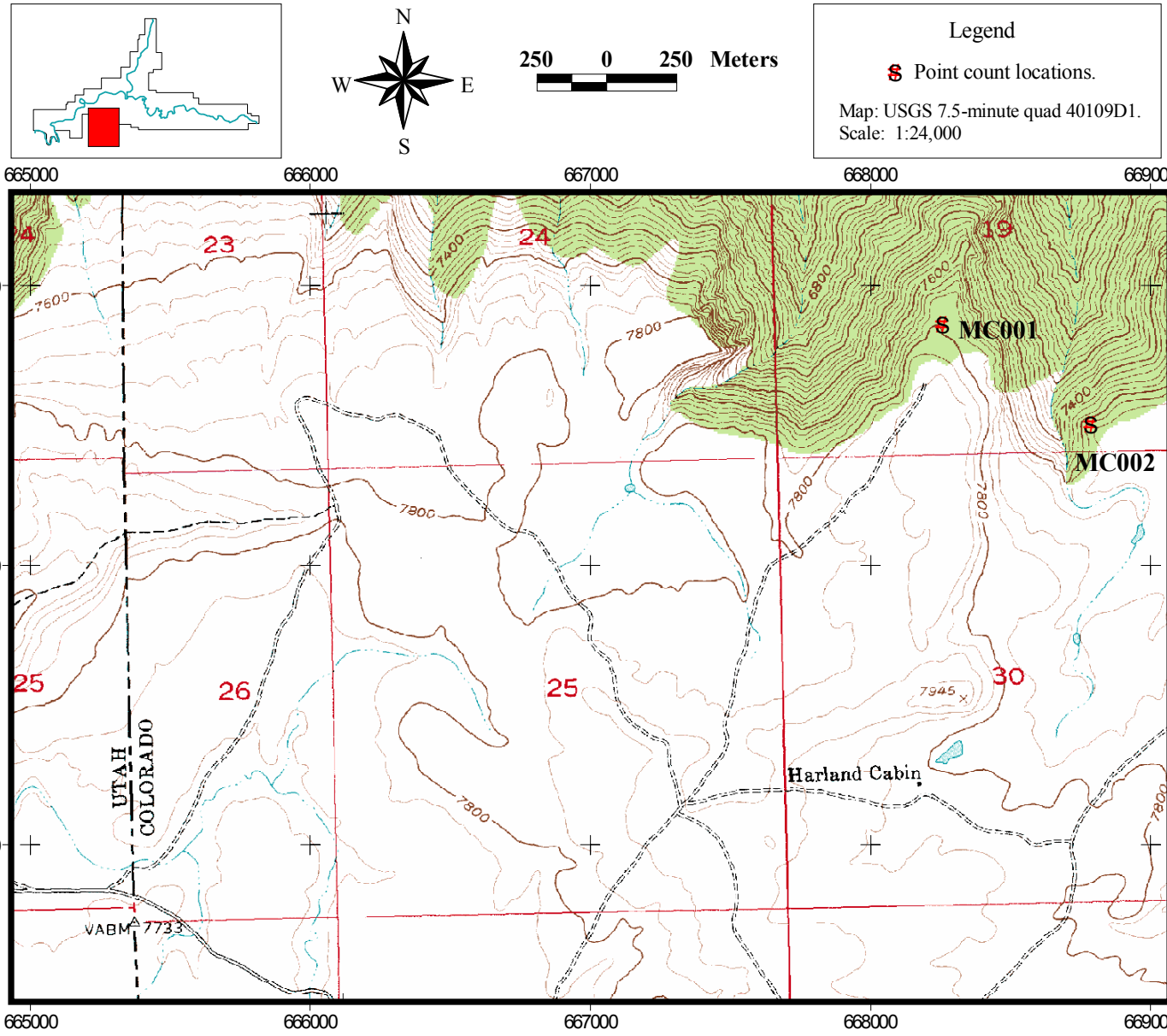


Index to Mixed Conifer point counts.

Points MC001 and MC002.
Access is from the Canyon Overlook Picnic Area off of the Harper's Corner Road. Park at the Picnic Area. Point MC001 is at the picnic area. To reach Point MC002, contour south along the cliff edge, cross a small draw and then contour north to reach the Mixed Conifer on the steep slope.

UTM locations of observation points MC001 and MC002:

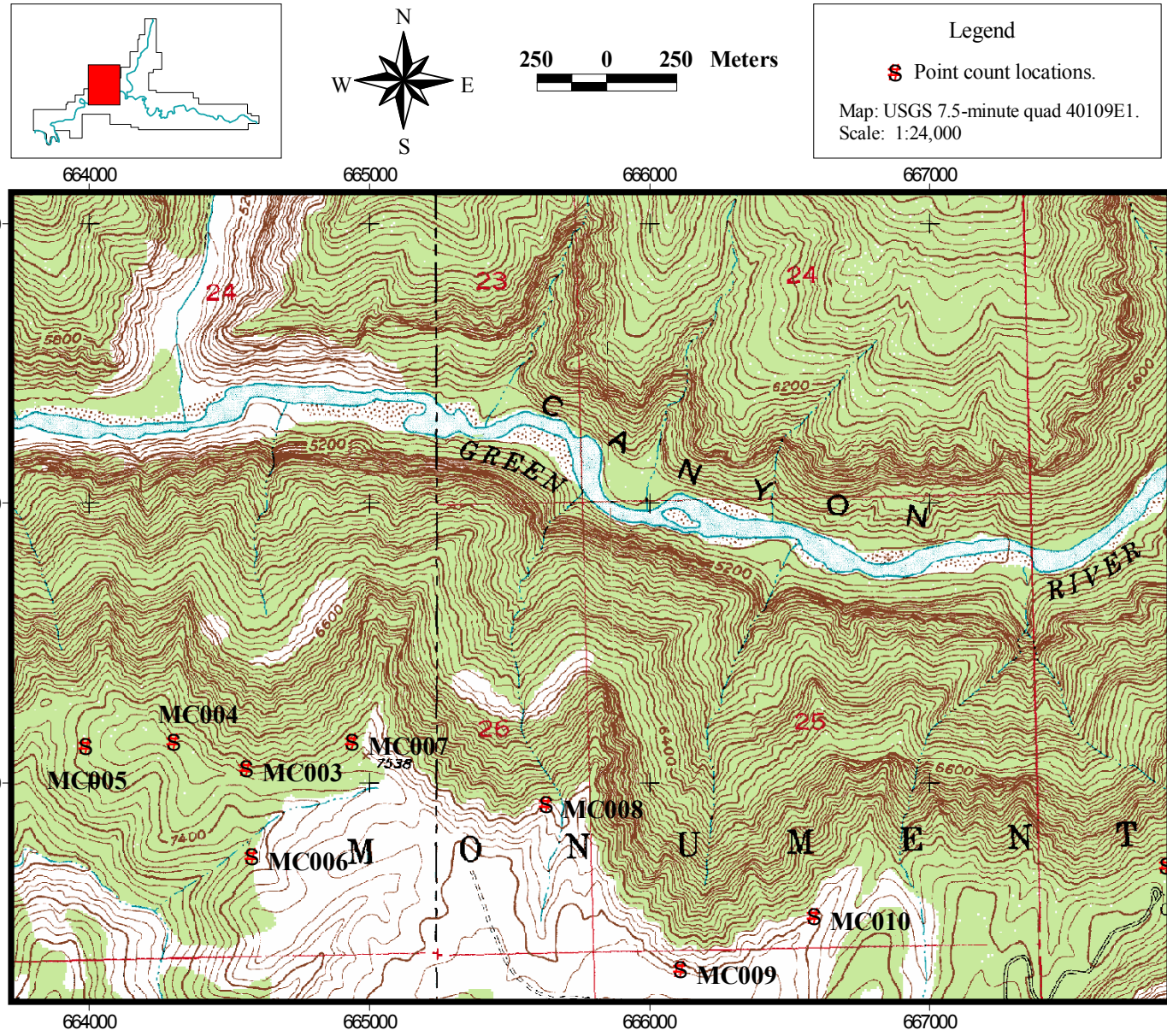
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC001	12T	668263	4479862	MC002	12T	668794	4479505



Points MC003-MC010.
Access is from the Harper's Corner Road. Drive north on the Harper's Corner Road, pass the Iron Springs Overlook, and continue toward the Echo Park Overlook. About .25 mile southwest of the Echo Park Overlook, turn north (left) onto a dirt road. Drive the dirt road to its end. The points are along the Whirlpool Canyon cliff edge.

UTM locations of Points MC003-MC010 PJ021observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC003	12T	664566	4488056	MC007	12T	664944	4488149
MC004	12T	664309	4488149	MC008	12T	665638	4487925
MC005	12T	663994	4488136	MC009	12T	666117	4487334
MC006	12T	664586	4487739	MC010	12T	666594	4487524

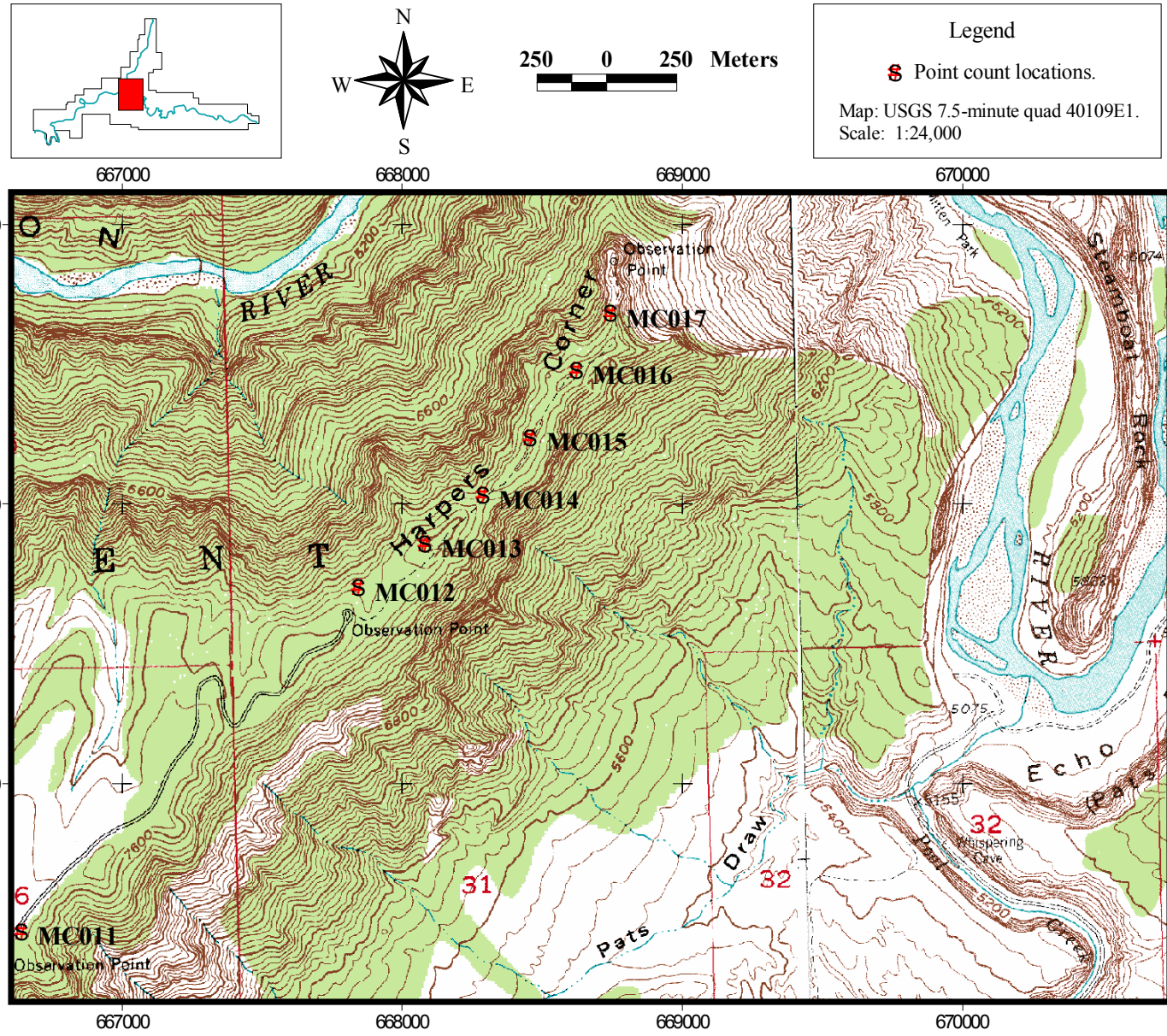


Points MC011-MC017

Point MC011 is at the Echo Park Overlook on the Harper's Corner Road. Points MC012-MC017 are along the Harper's Corner Trail at the end of the Harper's Corner Road. Points are spaced 250 meters apart and overlook the steep cliff face of Whirlpool Canyon.

UTM locations of MC011-MC017 observation points:

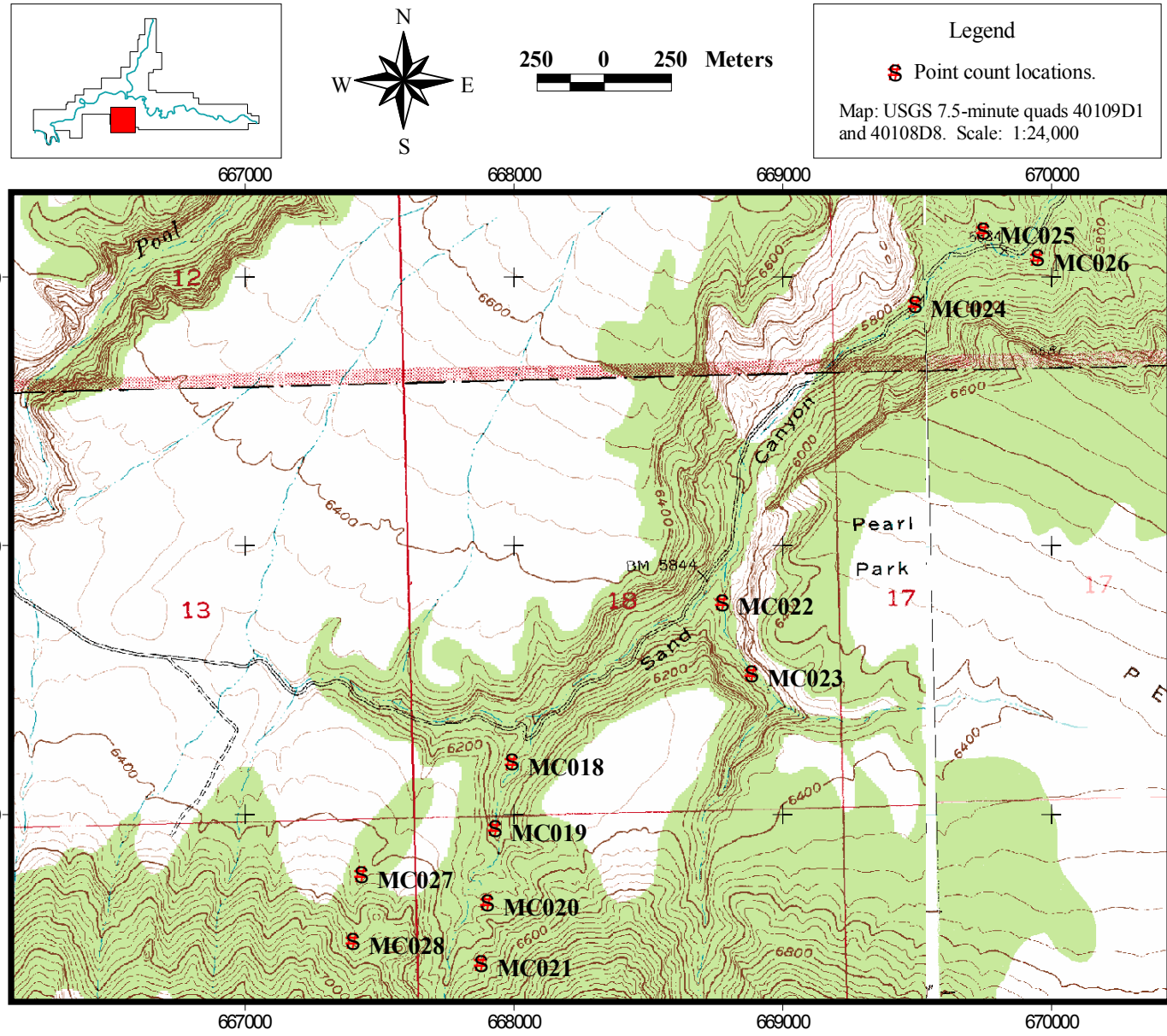
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC011	12T	666647	4486473	MC015	12T	668463	4488242
MC012	12T	667851	4487705	MC016	12T	668627	4488480
MC013	12T	668088	4487861	MC017	12T	668748	4488684
MC014	12T	668293	4488034				



Points MC018-MC028.
Points MC018-MC028 are accessed from the Echo Park Road in Sand Canyon. Points MC018-MC021 are in the first side-canyon entering Sand Canyon from the south. The points are spaced 250 meters apart. Points MC022-MC023 are in the second side -canyon entering Sand Canyon from the south. The points are spaced 300 meters apart. Points MC024-MC026 are near the northeast end of Sand Canyon. Points MC027-MC028 are on the steep hillside just on the southwest end of Sand Canyon.

UTM locations of MC018-MC028 observation points:

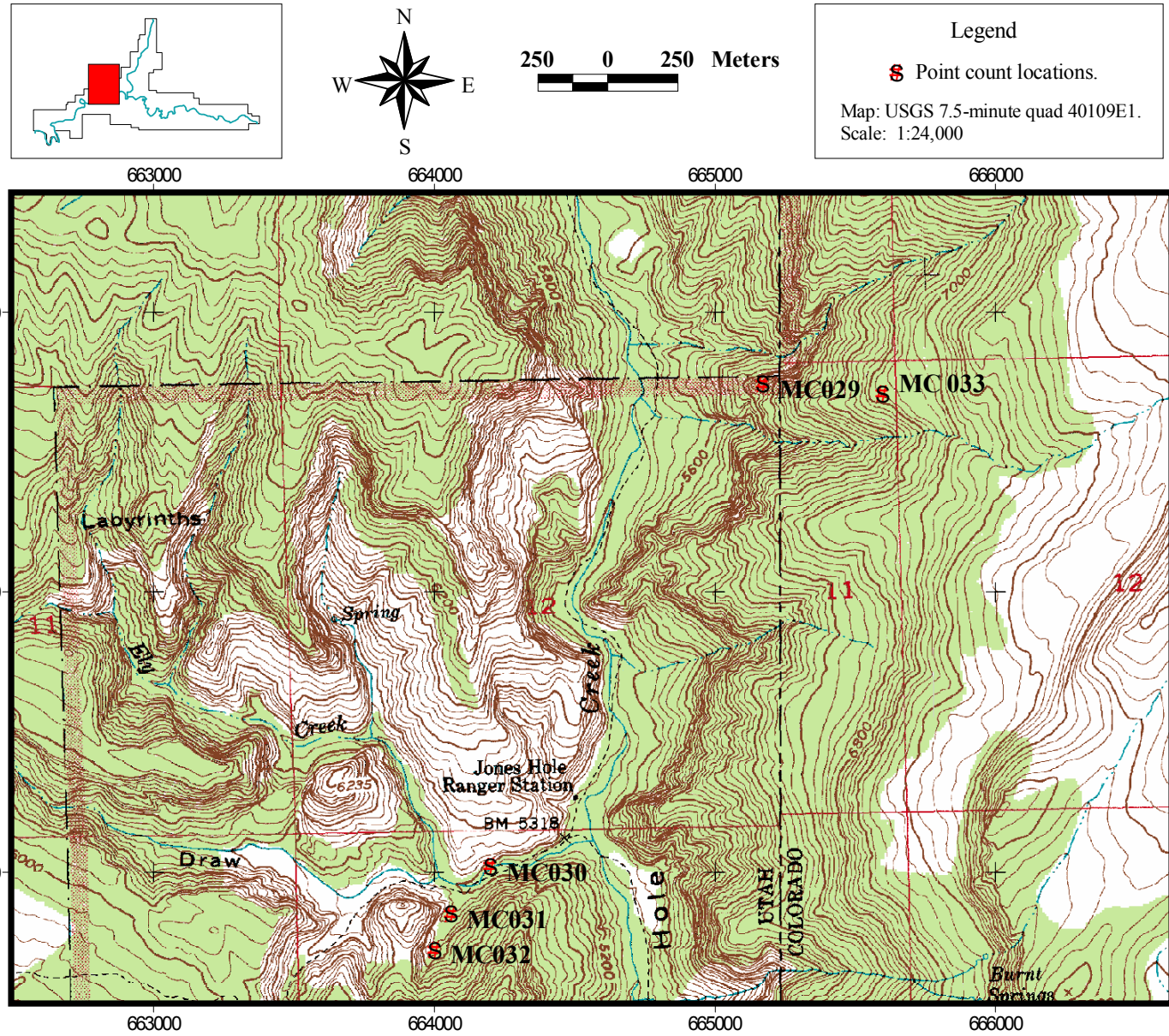
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC018	12T	668001	4481196	MC024	12T	669499	4482902
MC019	12T	667939	4480951	MC025	12T	669754	4483175
MC020	12T	667909	4480674	MC026	12T	669955	4483076
MC021	12T	667887	4480447	MC027	12T	667442	4480778
MC022	12T	668783	4481793	MC028	12T	667410	4480530
MC023	12T	668891	4481526				



Points MC029-MC033.
Points MC029-MC032 are in Jones Hole Canyon. Points MC029 and MC033 are on the steep east wall of the canyon, just south of the Monument Boundary. Points MC030-MC032 are in Big Draw.

UTM locations of MC029-MC033 observation points:

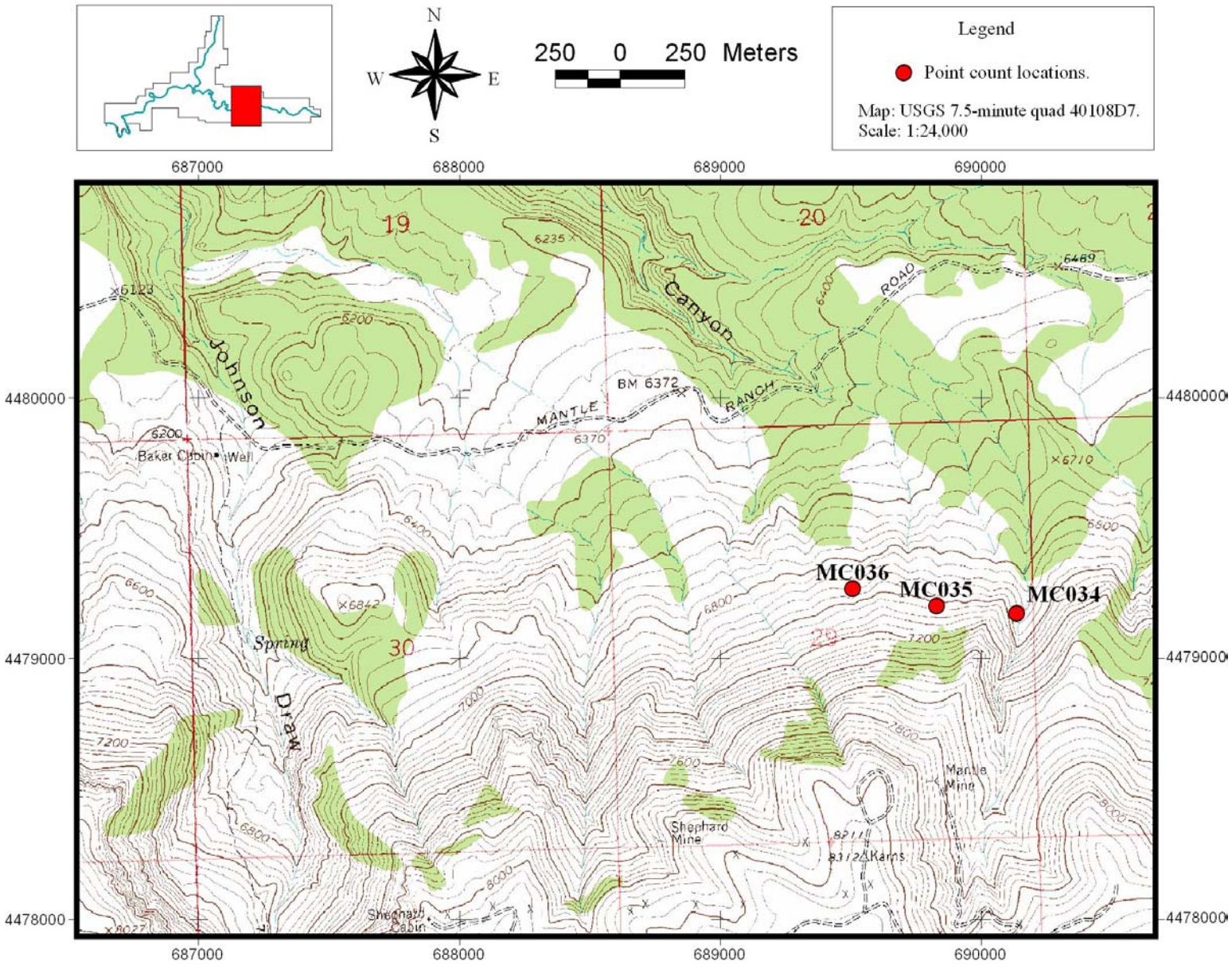
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC029	12T	665179	4493744	MC032	12T	664007	4491725
MC030	12T	664206	4492021	MC033	12T	664163	4495017
MC031	12T	664065	4491852				



Points MC034-MC036.
Points MC034-MC036 are accessed from the Mantle Ranch Road. The points are on the steep hillside of Blue Mountain, just west of the Baker Cabin.

UTM locations of MC034-MC036 observation points:

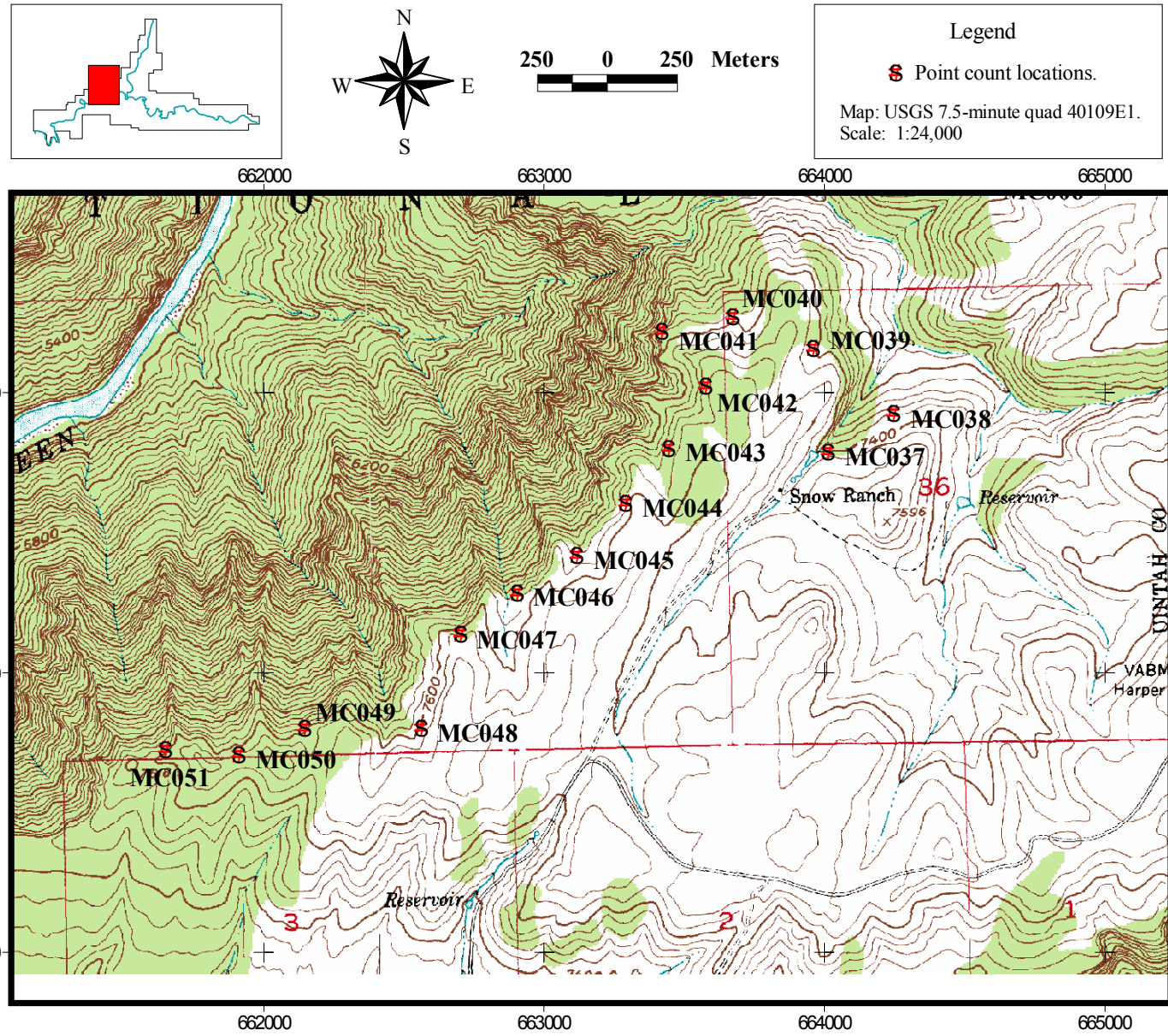
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC034	12T	690137	4479173	MC036	12T	689507	4479267
MC035	12T	689829	4479201				



Points MC037-MC051.
Points MC037-MC051 are along the south cliff edge of Whirlpool Canyon, and are accessed from the Snow Ranch. To reach the Snow Ranch, drive north on the Harper's Corner Road. Between the Iron Springs and Echo Park overlooks find a dirt road heading west. Drive this road uphill to a three-way intersection. Turn right (north) at the intersection and drive to the Snow Ranch. The points are along the steep cliffs and are spaced 250 meters apart.

UTM locations of MC037-MC051 observation points:

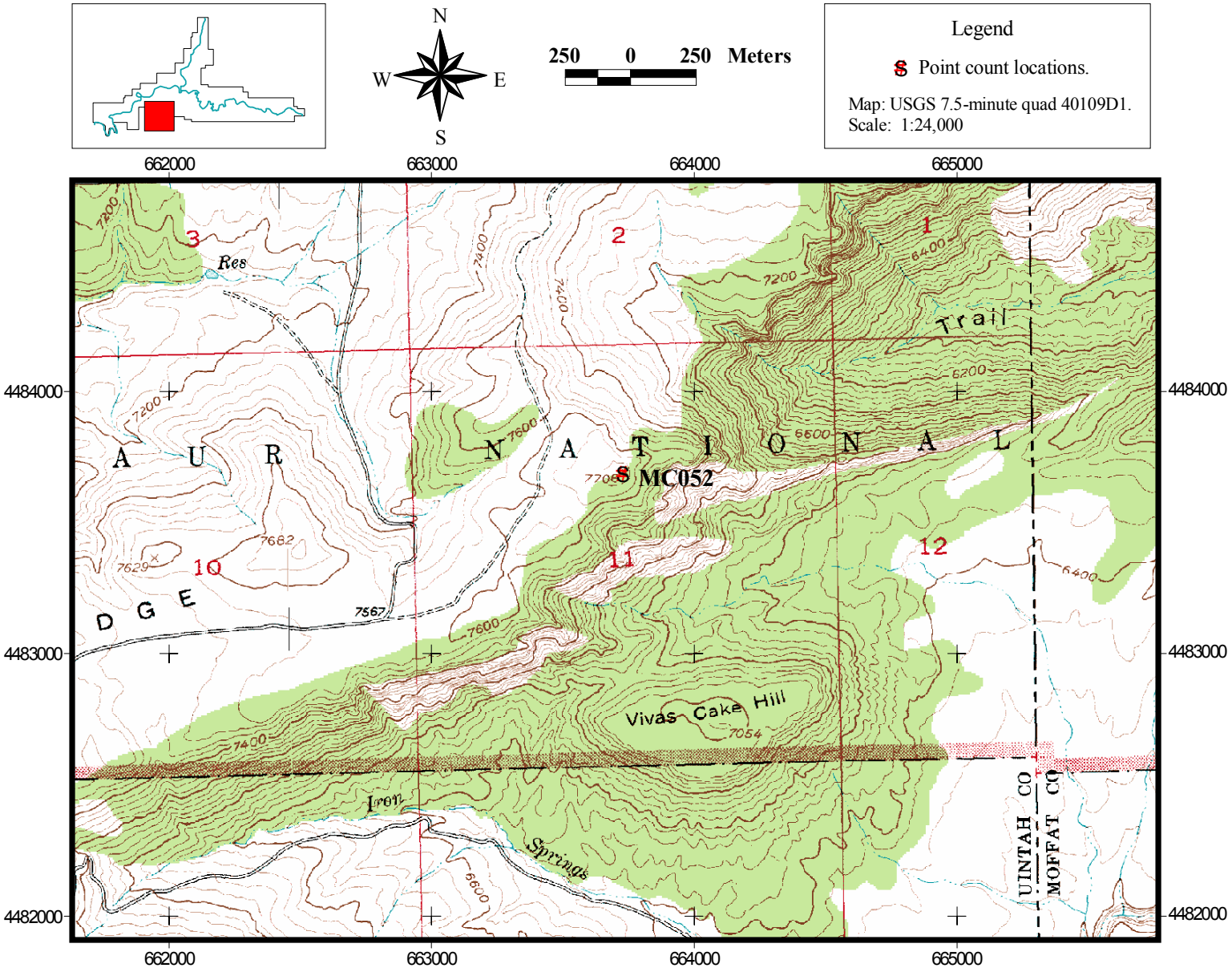
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC037	12T	664020	4486791	MC045	12T	663124	4486422
MC038	12T	664255	4486928	MC046	12T	662911	4486289
MC039	12T	663968	4487164	MC047	12T	662709	4486139
MC040	12T	663680	4487275	MC048	12T	662568	4485805
MC041	12T	663427	4487224	MC049	12T	662152	4485805
MC042	12T	663584	4487027	MC050	12T	661919	4485708
MC043	12T	663452	4486805	MC051	12T	661655	4485728
MC044	12T	663298	4486608				



Point MC052.
Point MC052 is at the Iron Springs Bench Overlook. The overlook is on the Harper's Corner Road just north of the Monument's boundary.

UTM locations of MC052 observation point:

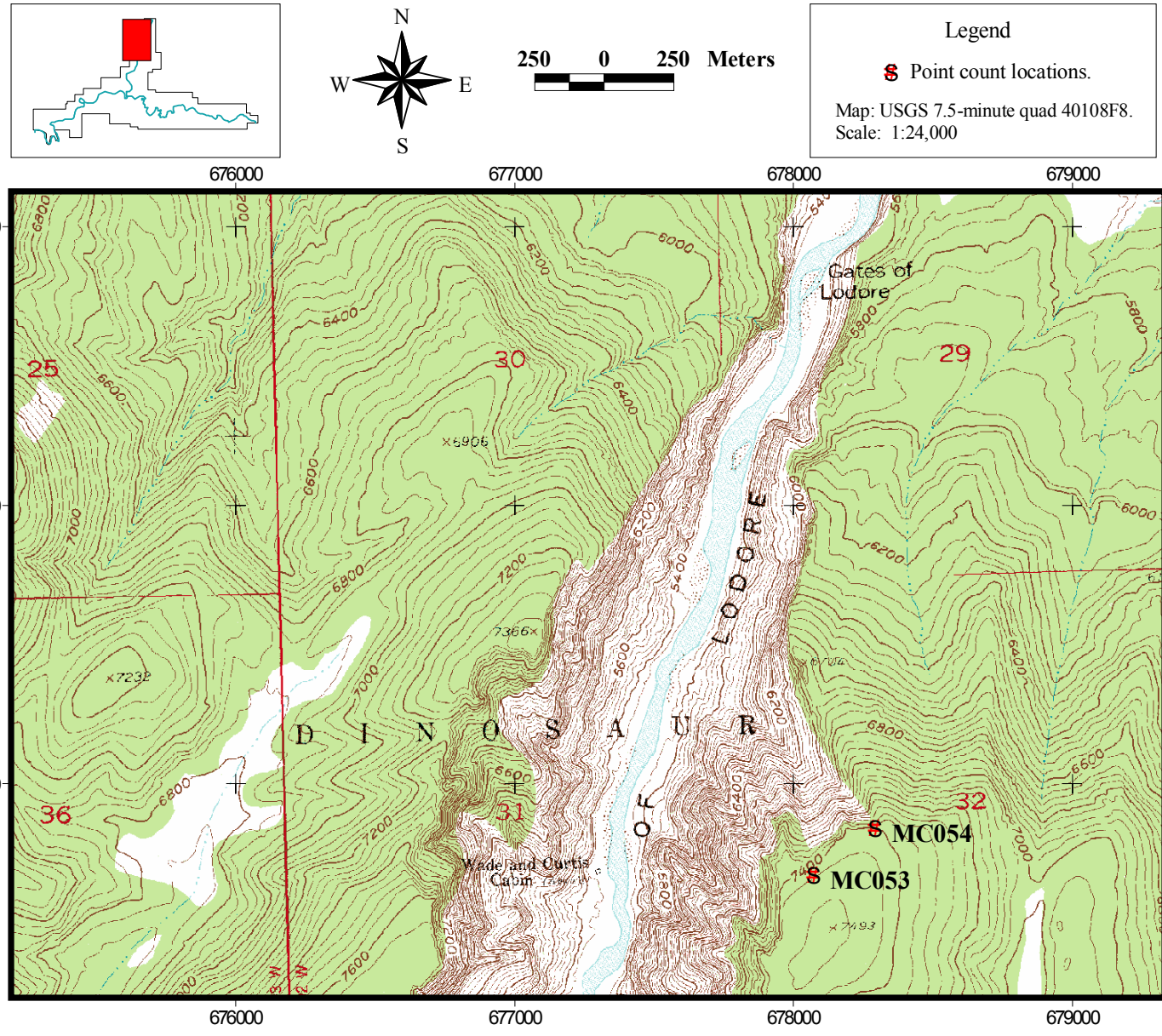
Point	Zone	Easting	Northing
MC052	12T	663736	4483688



Points MC053-MC054.
Points 53 MC53 and MC 54 are at the Gates of Lodore. Access is at the end of the road at the Gates of Lodore campground, at the beginning of the nature trail. From the end of the nature trail, follow a due-south line up the very steep slope on the east side of the Canyon of Lodore. Point MC053 is at the top of the plateau on flat ground. Point MC054 is at the edge of the plateau, just past the steep climb. The climb to these points has serious fall potential; be careful.

UTM locations of MC053-MC054 observation points:

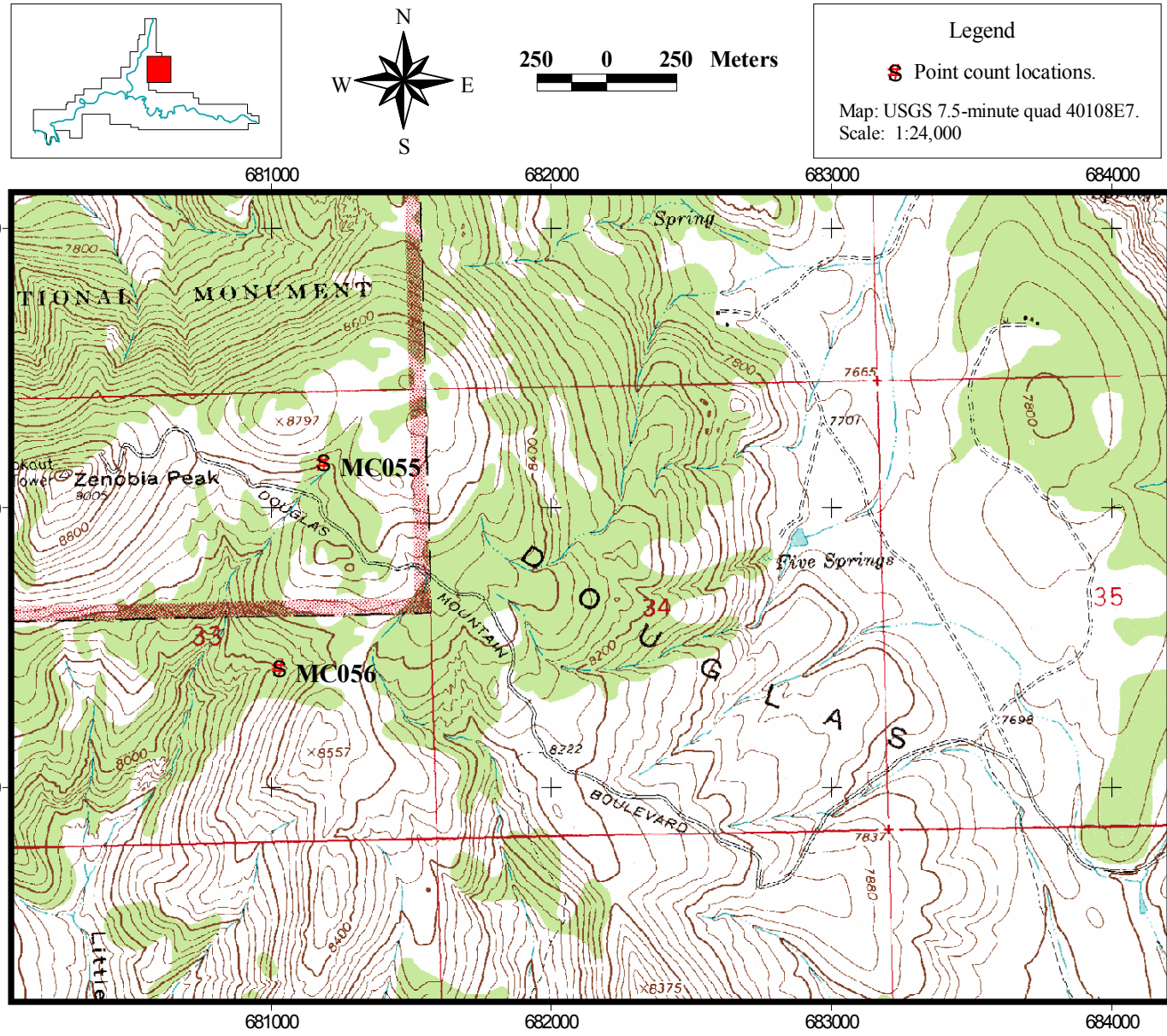
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC053	12T	678080	4506675	MC054	12T	678300	4506843



Points MC055-MC056.
Access is from Zenobia Peak on the Douglas Mountain Boulevard. Point MC055 is north of the road in the upper reaches of Little Joe Draw. Point MC056 is south of the road near Little Joe Draw.

UTM locations of MC055-MC056 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC055	12T	681194	4497164	MC056	12T	681036	4496428

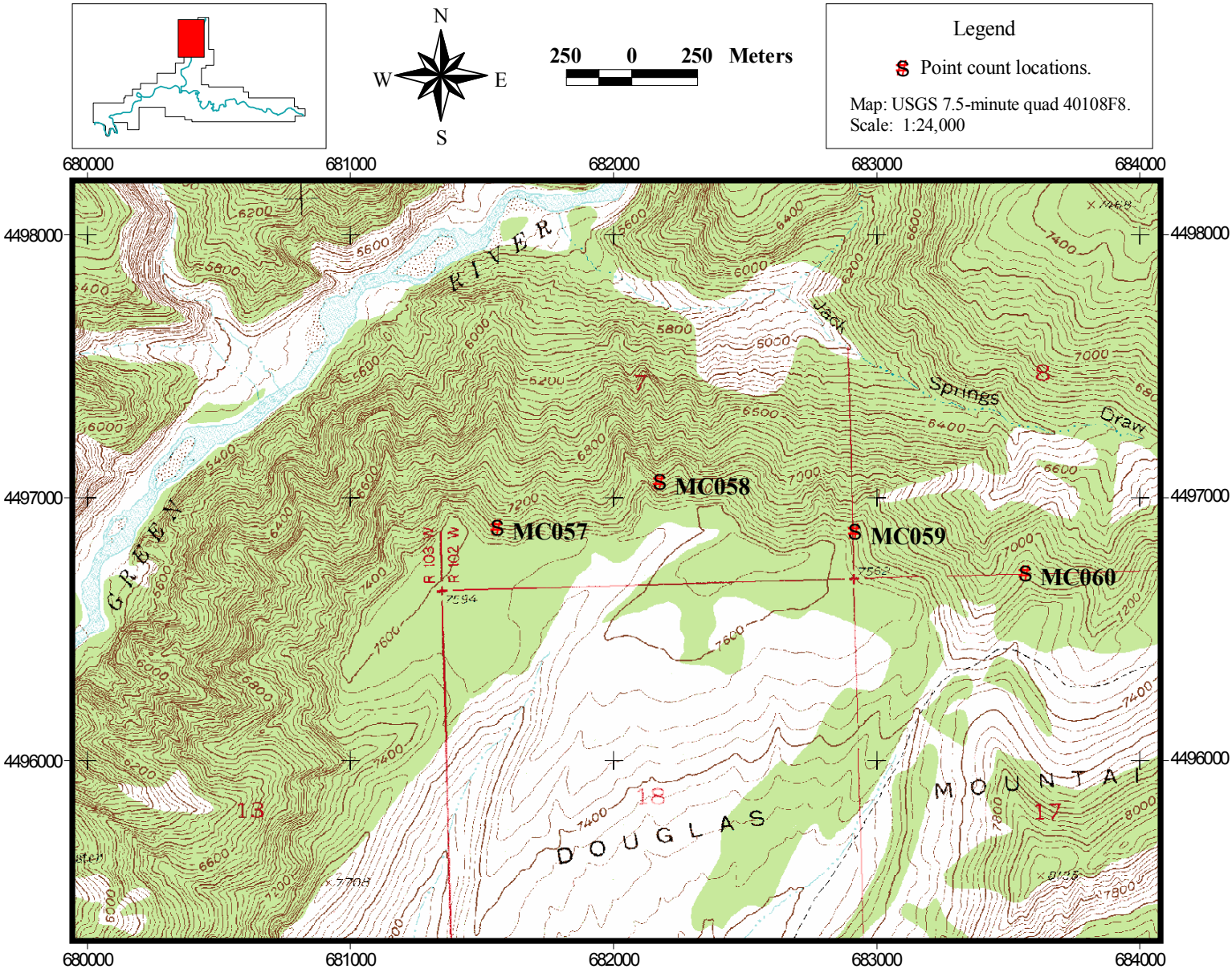


Points MC057-MC060

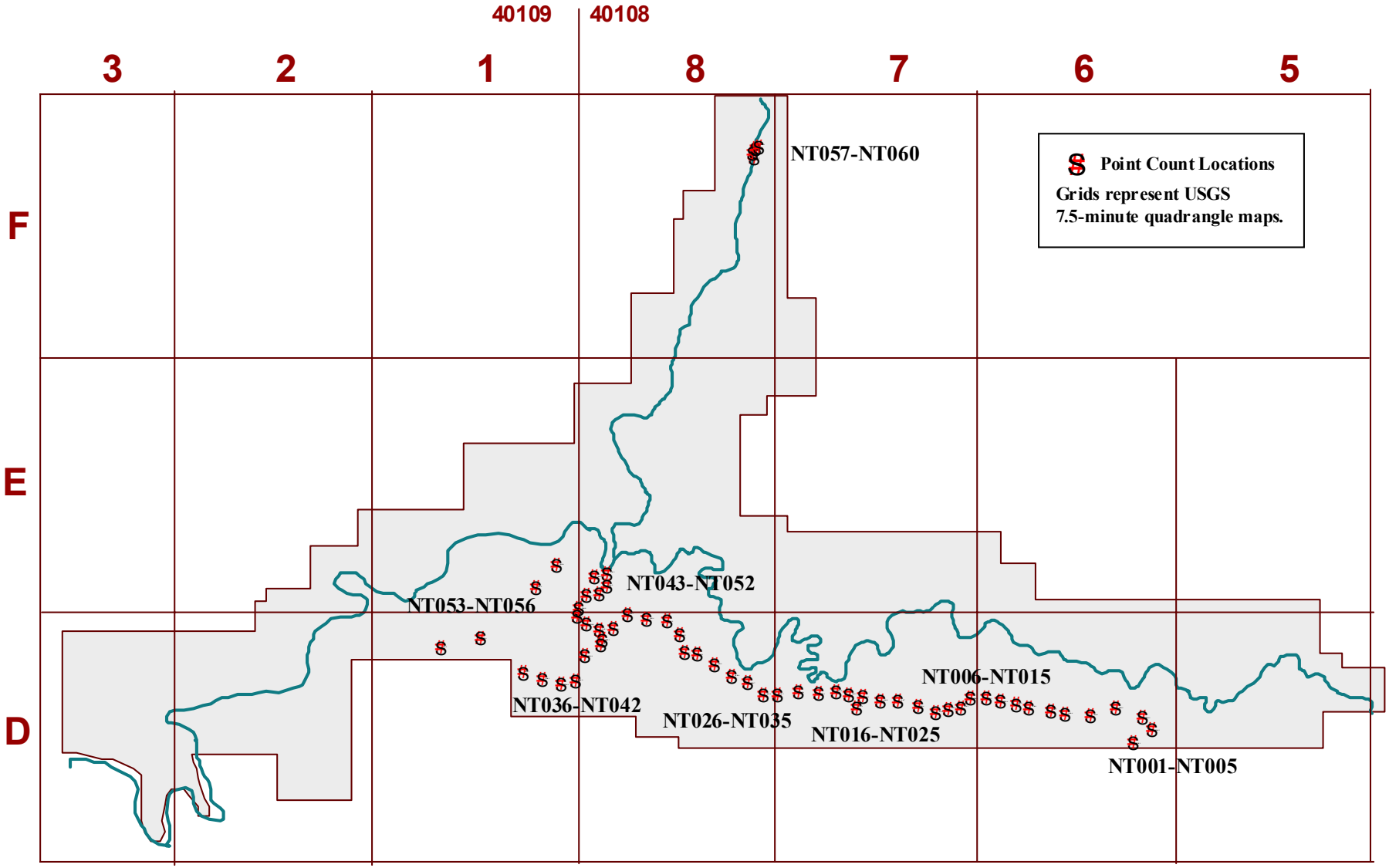
Access is from Zenobia Basin on Douglas Mountain. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the park near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Continue past the boundary, and at the intersection at Limestone Draw, turn north (right). Follow the rough road into Zenobia Basin. Pass the Old Buffam Place and drive to a large red-rock butte (USGS point 7539). Pass the Butte and continue to the Old Bassett Camp. Park at the camp and continue to walk north along the four wheel drive road to the south rim of Jack Springs Draw. The points are along the canyon rim and are spaced 250 meters apart.

UTM locations of MC057-MC060 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
MC057	12T	676856	4502376	MC059	12T	678217	4502361
MC058	12T	677473	4502549	MC060	12T	678864	4502203



Nocturnal Point Counts

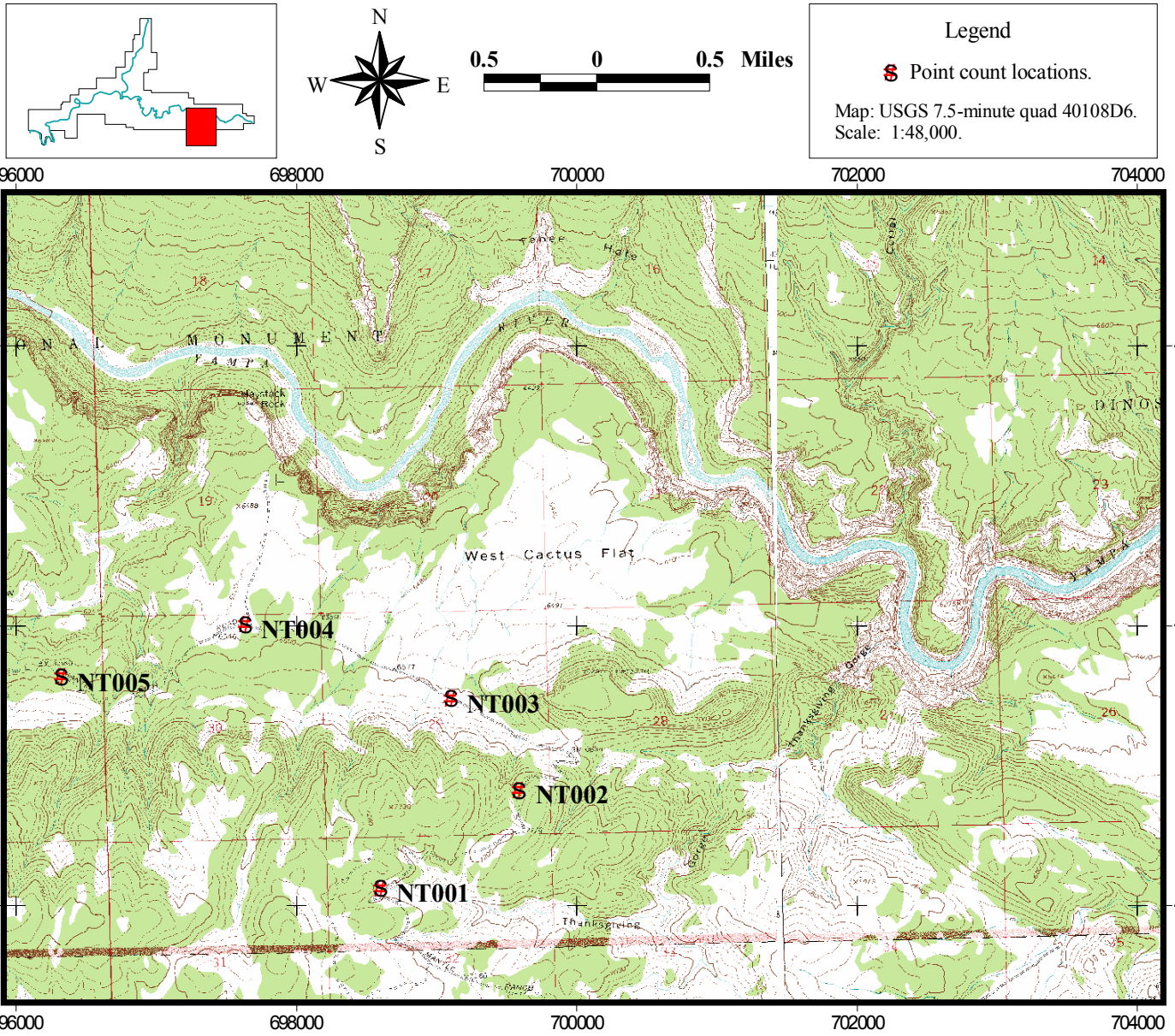


Index to Nocturnal point counts.

Points NT001-NT005.
Access is on the Mantle Ranch Road near the Monument's east boundary. Point NT001 is at the road's eastern entry point into the Monument. Drive west on the Mantle Ranch Road to points NT002-NT005. The points are spaced 1 mile apart.

UTM locations of NT001-NT005 observation points:

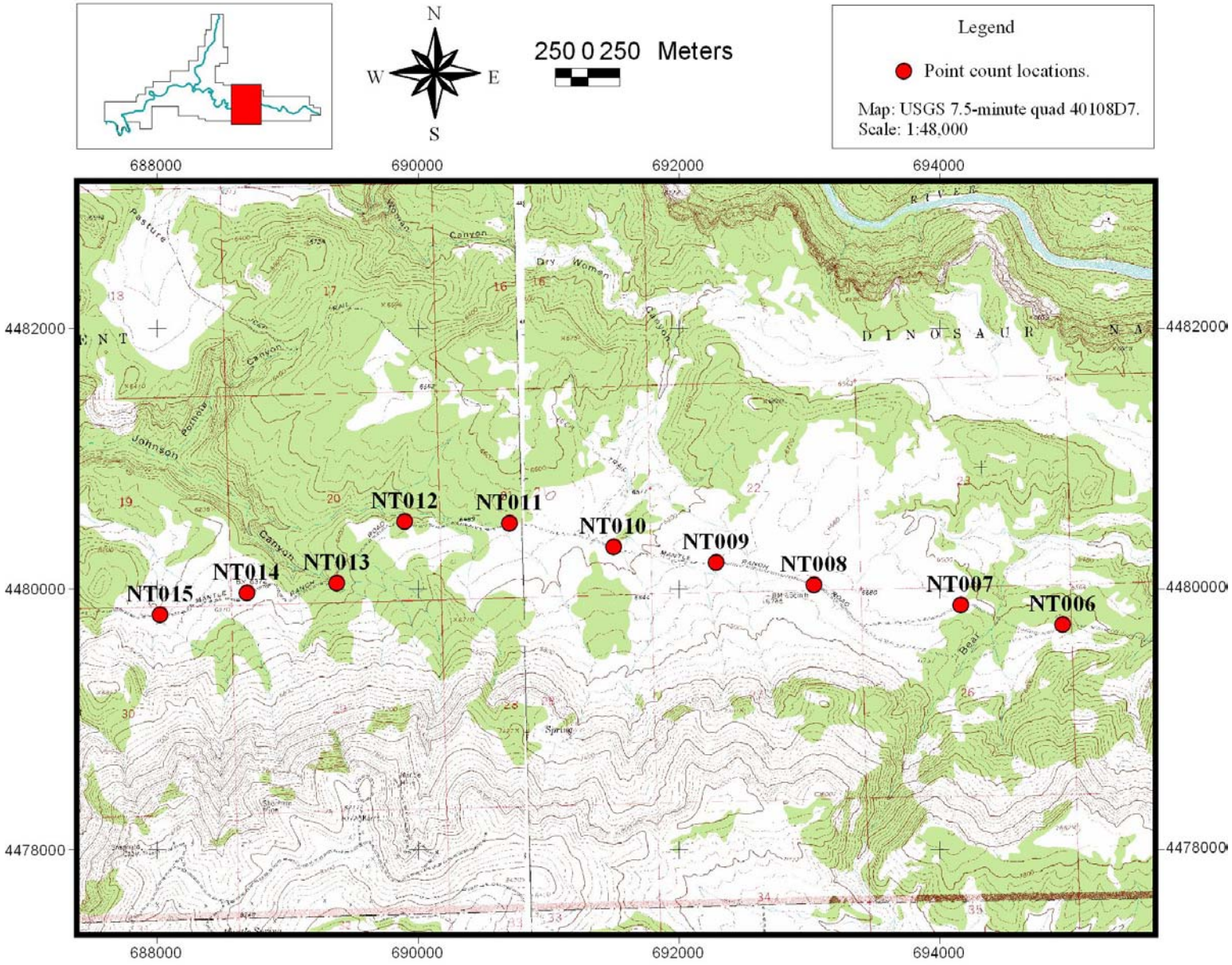
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT001	12T	698614	4478131	NT004	12T	697647	4480014
NT002	12T	699604	4478830	NT005	12T	696334	4479639
NT003	12T	699116	4479483		12T		



Points NT006-NT015.
Access is on the Mantle Ranch Road. Point NT006 is 5 miles west of the road's eastern entry point into the Monument. Drive west on the Mantle Ranch Road to points NT007-NT015. The points are spaced .5 mile apart.

UTM locations of NT006-NT015 observation points:

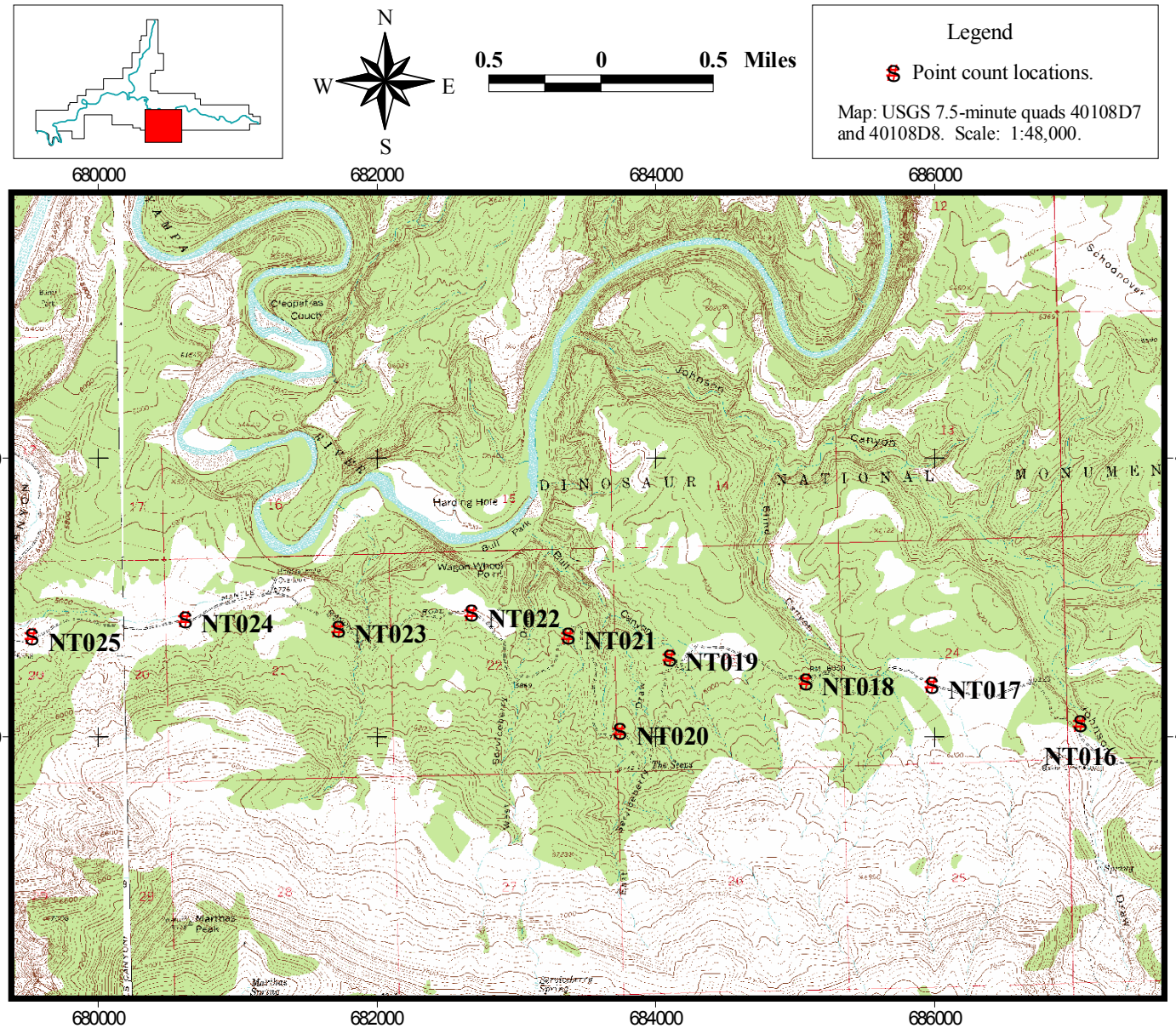
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT006	12T	694946	4479727	NT011	12T	690705	4480503
NT007	12T	694161	4479875	NT012	12T	689901	4480517
NT008	12T	693039	4480030	NT013	12T	689380	4480042
NT009	12T	692288	4480202	NT014	12T	688690	4479967
NT010	12T	691500	4480321	NT015	12T	688026	4479800



Points NT016-NT025.
Access is on the Mantle Ranch Road. Point NT016 is 10 miles west of the road's eastern entry point into the Monument. Drive west on the Mantle Ranch Road to points NT017-NT025. The points are spaced .75 mile apart.

UTM locations of NT016-NT025 observation points:

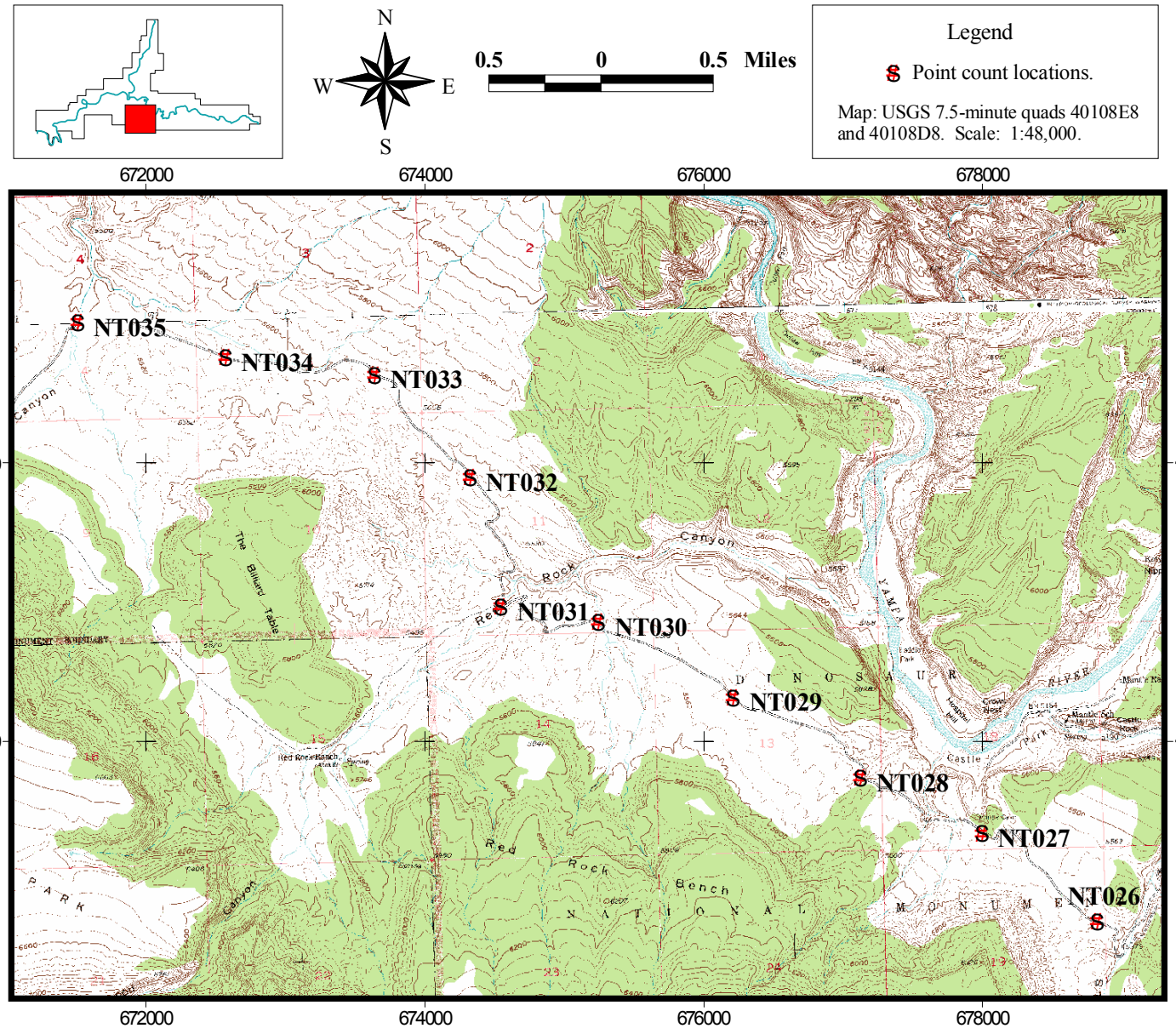
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT016	12T	687061	4480100	NT021	12T	683385	4480729
NT017	12T	685996	4480377	NT022	12T	682693	4480892
NT018	12T	685090	4480401	NT023	12T	681735	4480780
NT019	12T	684114	4480576	NT024	12T	680639	4480850
NT020	12T	683758	4480044	NT025	12T	679539	4480721



Points NT026-NT035.
Access is on the Mantle Ranch Road. Point NT026 is 17.5 miles west of the road's eastern entry point into the Monument. Drive west on the Mantle Ranch Road to reach points NT027-NT035. The points are spaced .75 mile apart.

UTM locations of NT026-NT035 observation points:

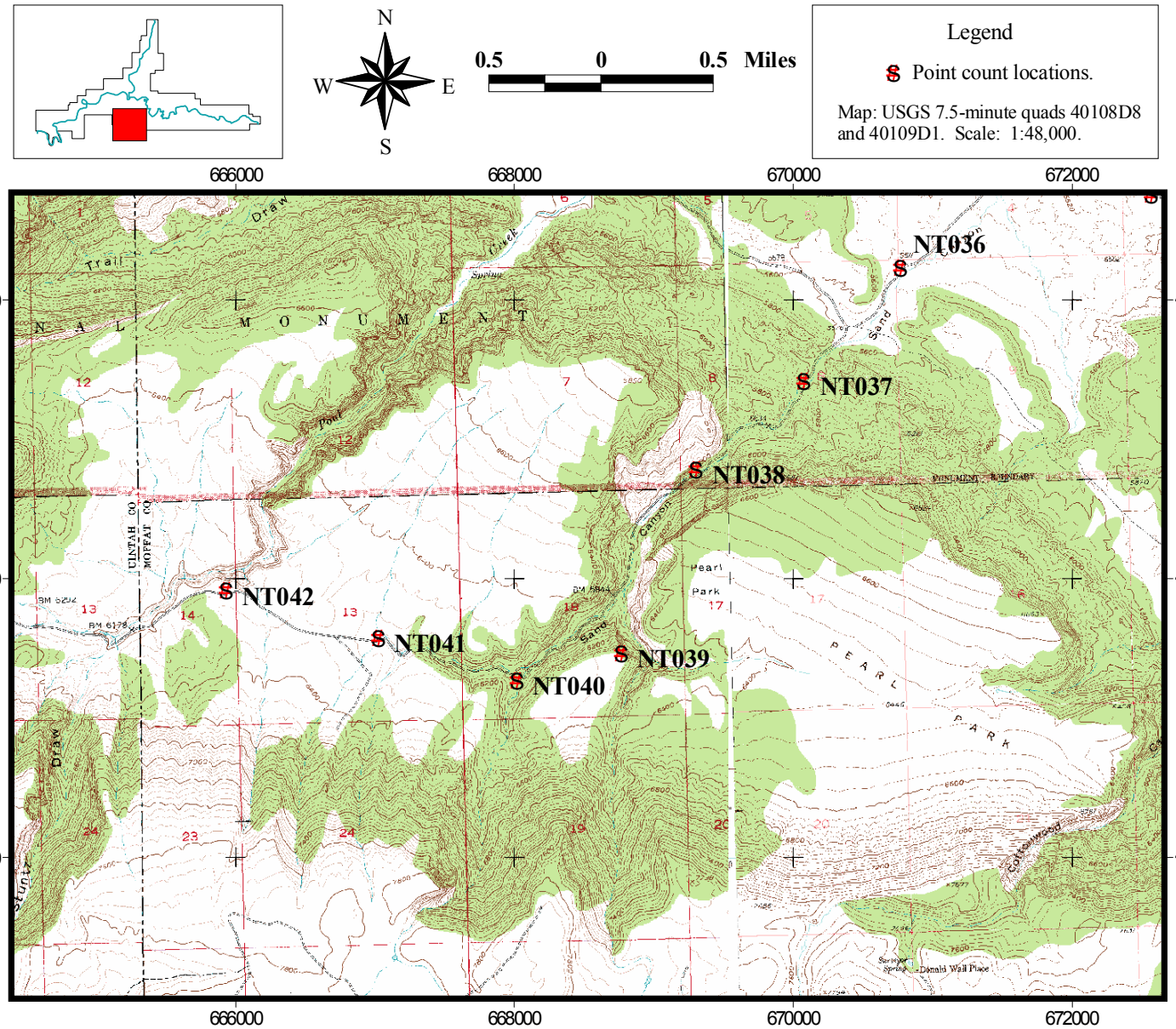
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT026	12T	678837	4480709	NT031	12T	674558	4482970
NT027	12T	678008	4481344	NT032	12T	674334	4483900
NT028	12T	677137	4481745	NT033	12T	673652	4484637
NT029	12T	676225	4482320	NT034	12T	672580	4484762
NT030	12T	675260	4482861	NT035	12T	671521	4485014



Point NT036-NT042.
Access is on the Echo Park / Mantle Ranch Road. Point NT042 is .5 mile from the road's west entry point into the Monument. Drive east on the road to reach points NT041-NT036. The points are spaced .75 mile apart.

UTM locations of NT036-NT042 observation points:

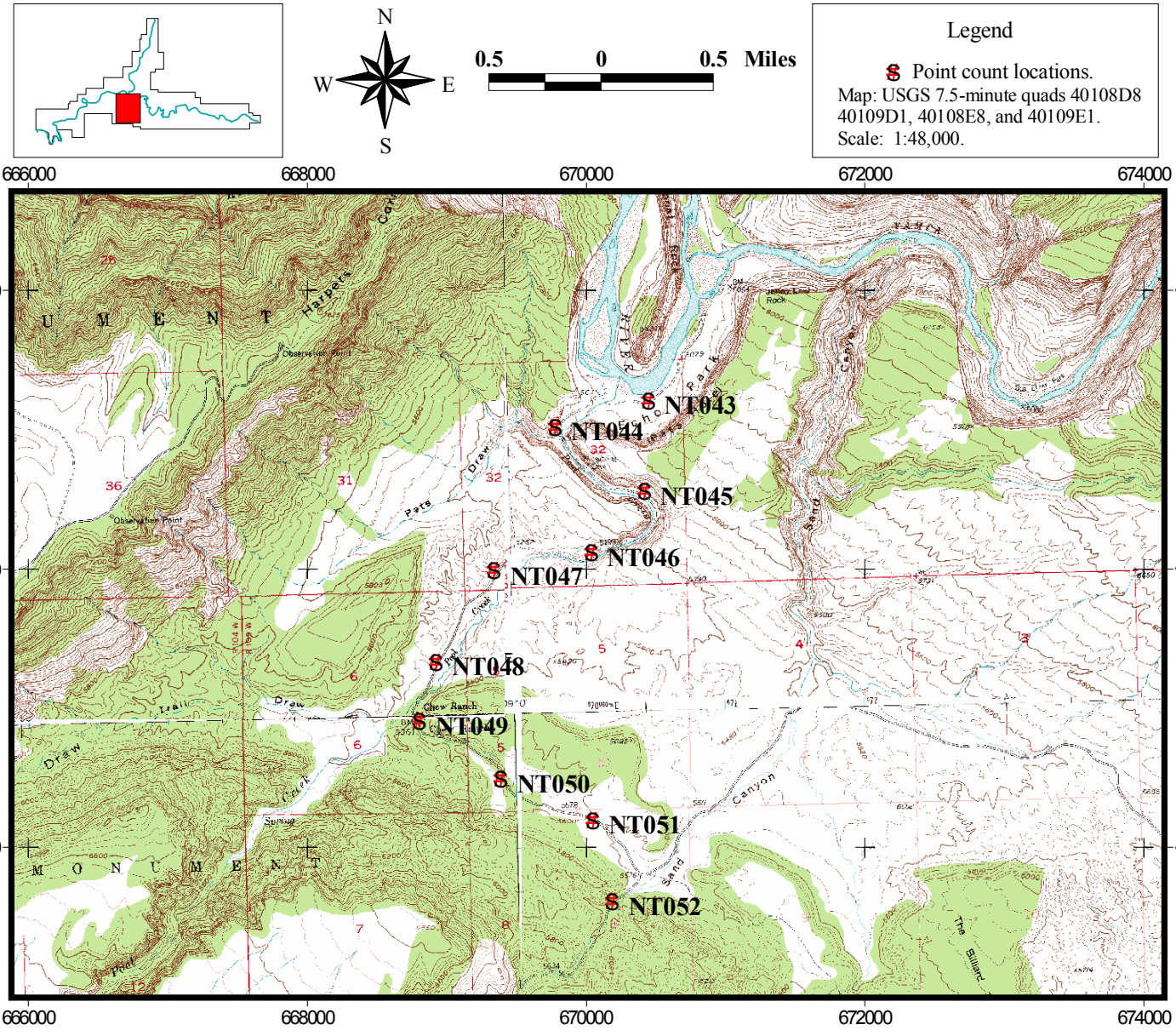
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT036	12T	670785	4484232	NT040	12T	668029	4481271
NT037	12T	670089	4483421	NT041	12T	667038	4481578
NT038	12T	669318	4482788	NT042	12T	665946	4481915
NT039	12T	668780	4481467		12T		



Points NT043-NT052.
Access is at the Echo Park Campground. Point NT043 is at the boat ramp in the campground. Drive the Echo Park Road south to reach points NT044-NT052. The points are spaced at 0.5 mile intervals.

UTM locations of NT043-NT052 observation points:

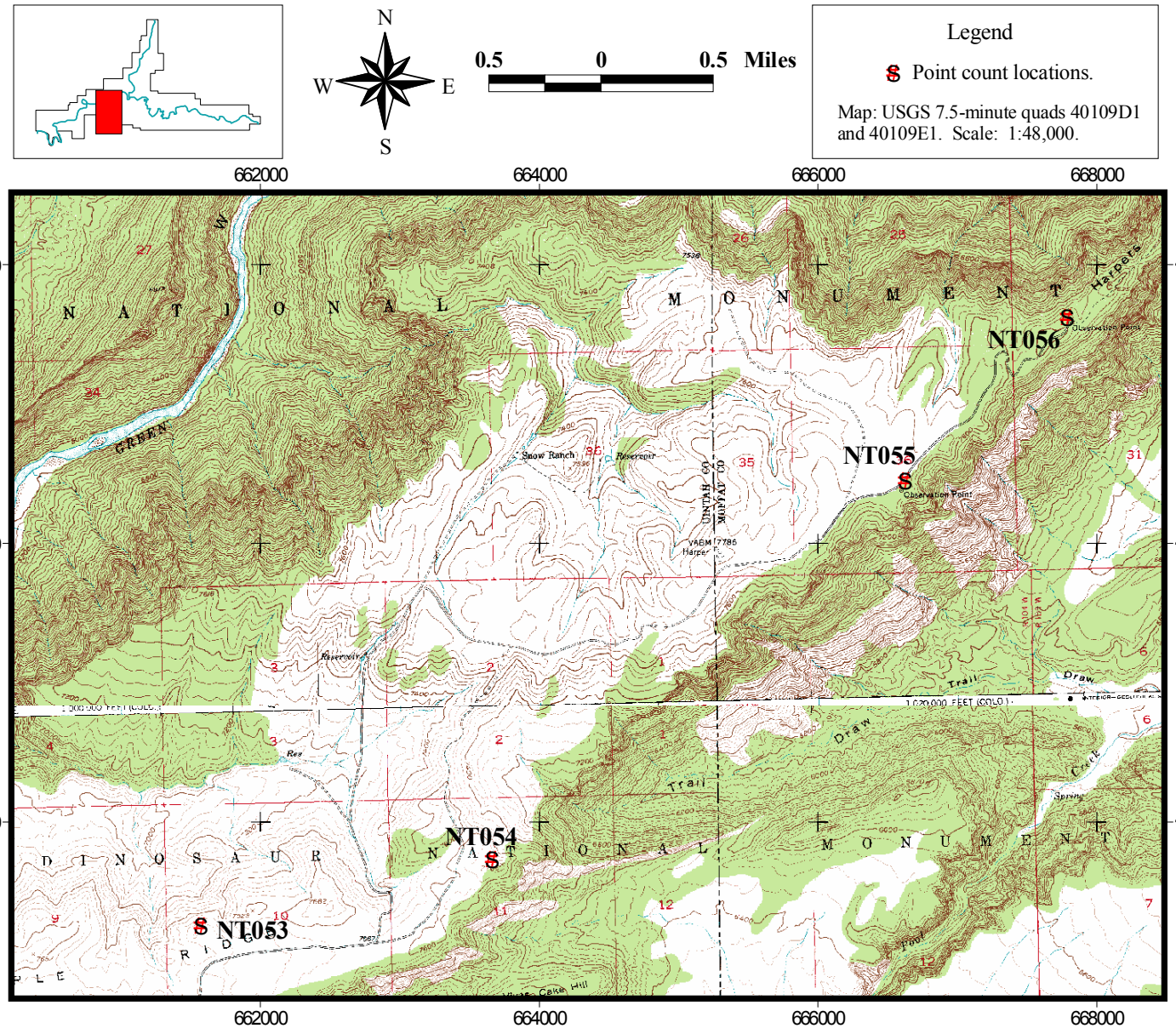
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT043	12T	670460	4487211	NT048	12T	668938	4485338
NT044	12T	669791	4487026	NT049	12T	668817	4484912
NT045	12T	670432	4486561	NT050	12T	669402	4484495
NT046	12T	670051	4486124	NT051	12T	670063	4484202
NT047	12T	669353	4485990	NT052	12T	670202	4483617



Points NT053-NT056.
Access is from the Harper's Corner Road. Point NT053 is at the Island Park Overlook. Point NT054 is at the Iron Springs Bench Overlook. Point NT055 is at the Echo Park Overlook. Point NT056 is at the end of the Harper's Corner Road and the beginning of the Harper's Corner Trail.

UTM locations of NT053-NT056 observation points:

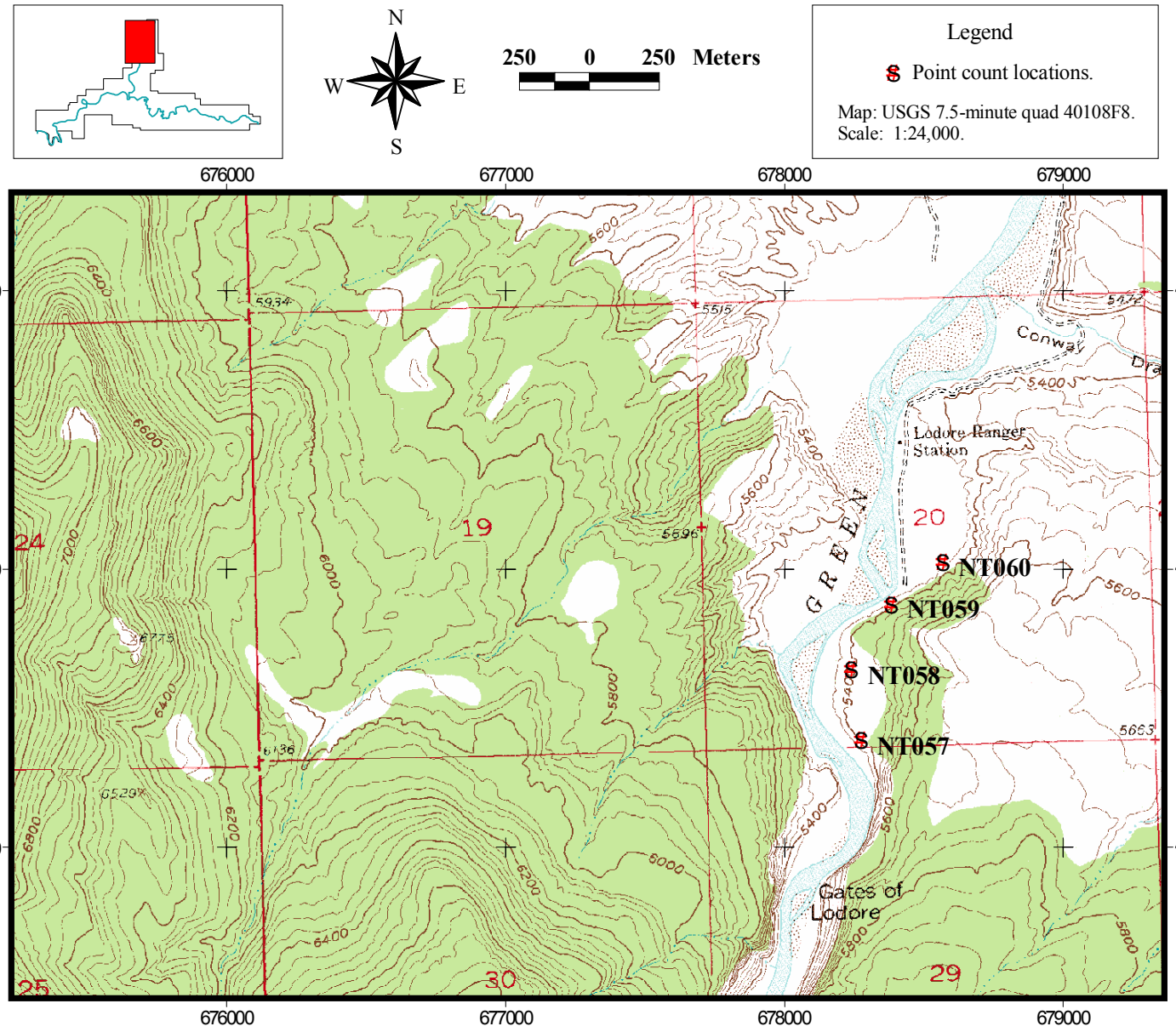
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT053	12T	661583	4483259	NT055	12T	666636	4486454
NT054	12T	663677	4483733	NT056	12T	667799	4487629



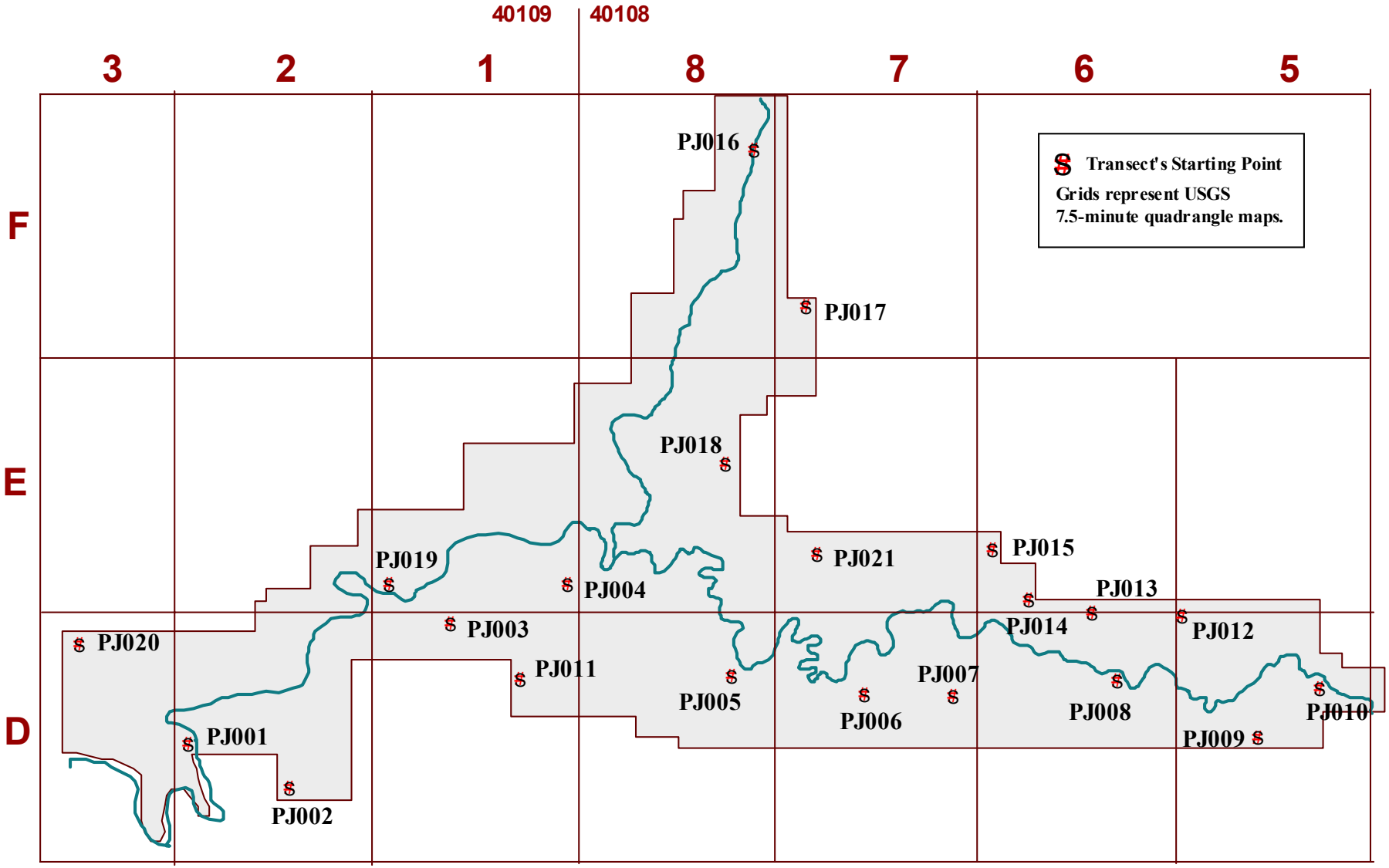
Points NT057-NT060.
Access is from the Gates of Lodore Campground. Drive to the end of the campground road and beginning of the nature trail. Point NT057 is at the end of the nature trail. Follow the trail north to points NT058-NT060. The points are spaced at 250 meter intervals.

UTM locations of NT057-NT060 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
NT057	12T	678282	4509386	NT059	12T	678390	4509875
NT058	12T	678247	4509640	NT060	12T	678510	4509962



Pinyon-juniper Transects

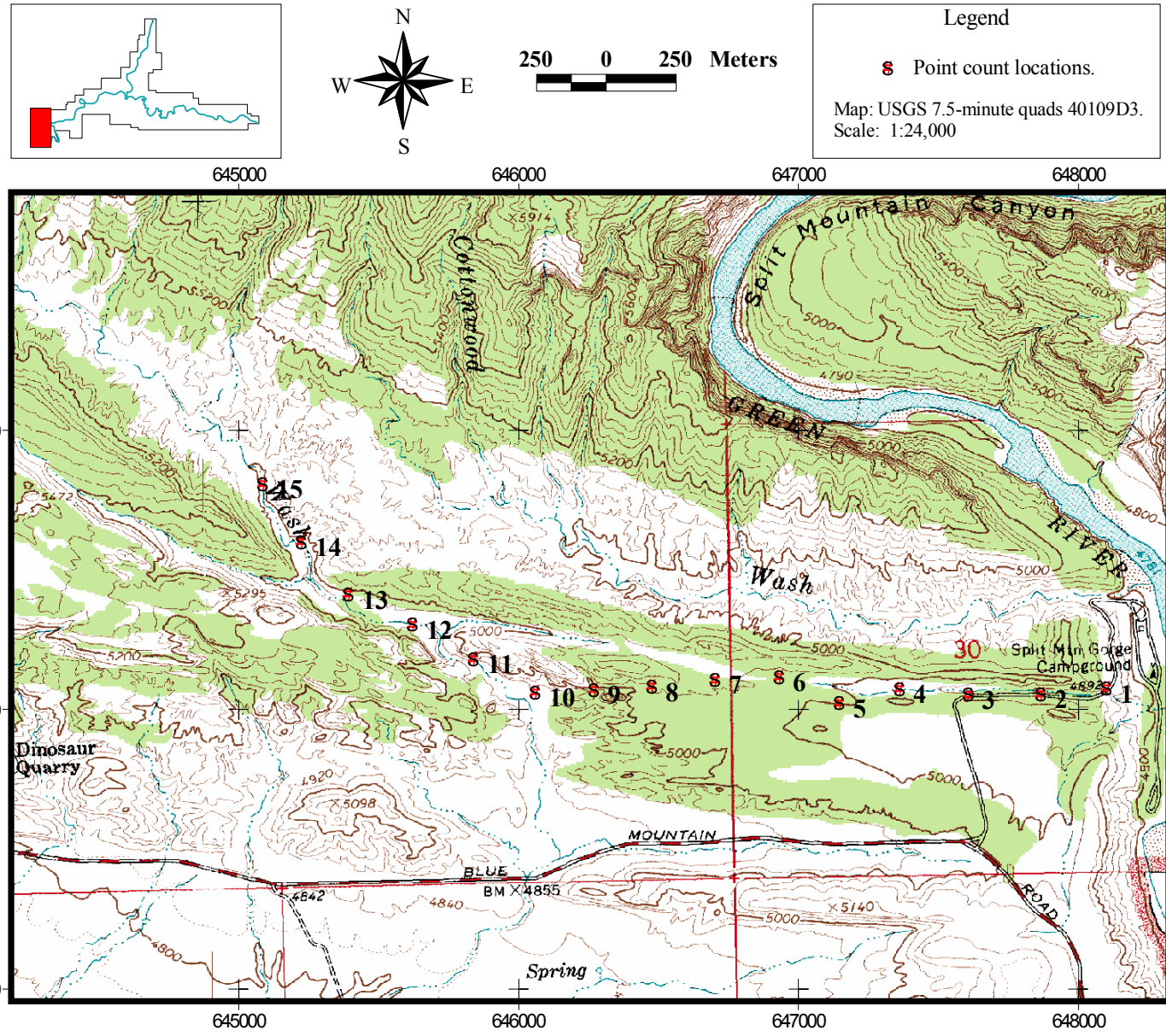


Index to Pinyon-juniper transects.

Transect PJ001.
Access is at the pull-out on the east side of the Split Mountain Gorge Campground Road where the road turns 90 degrees to the north. Points 1-3 follow the road due west. Leave the road and continue west in the narrow strip of pinyon-juniper to point 4. At point, 4 find the nature trail and follow the trail west to points 5-6. At point 6, leave the nature trail and continue due west to points 7-10. At point 10, turn to 296 degrees and follow Red wash to point 11. From point 11, continue to follow Red Wash upstream in a northwest direction to points 12-15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ001 observation points:

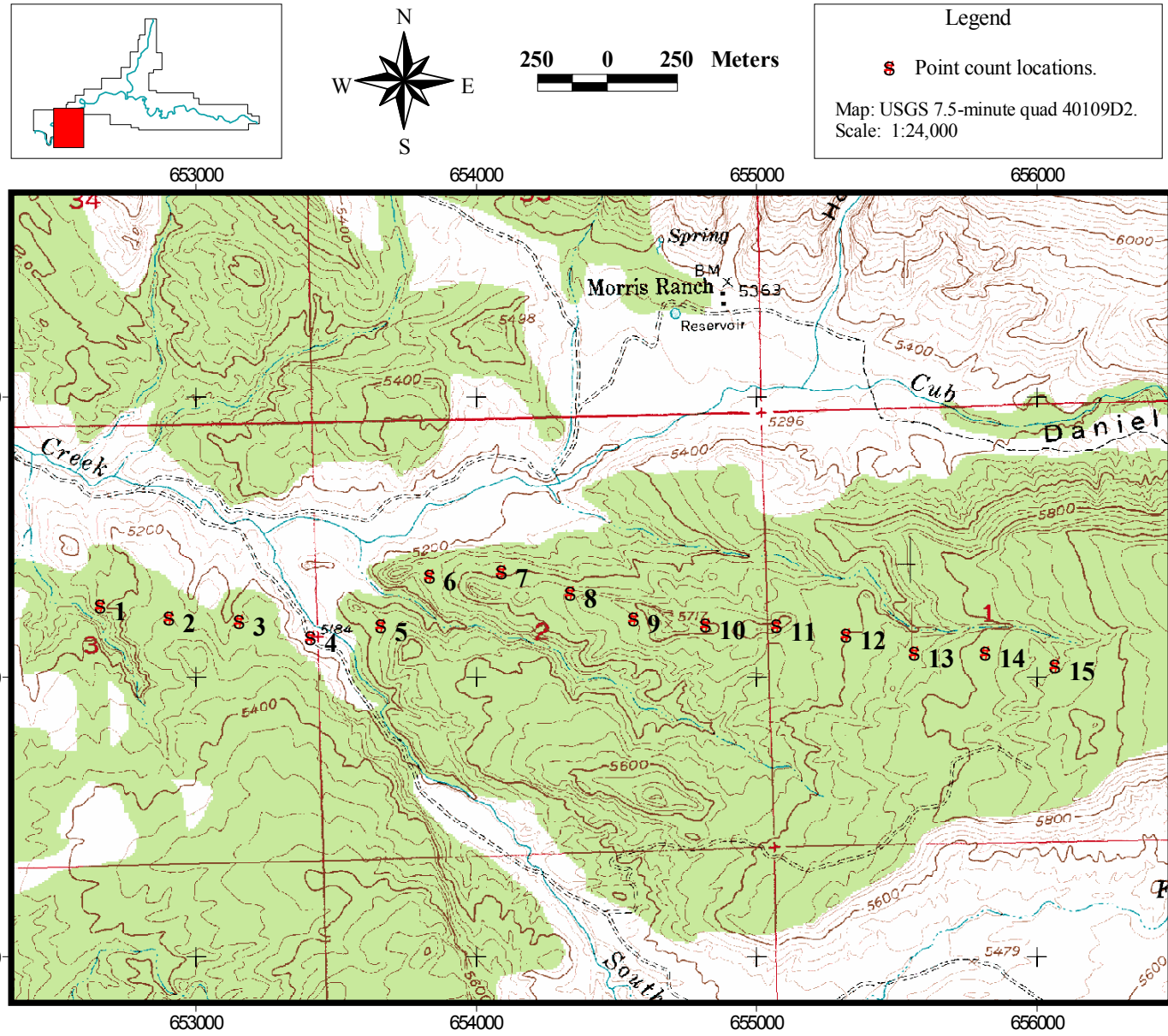
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	648106	4478077	9	12T	646275	4478073
2	12T	647870	4478059	10	12T	646065	4478064
3	12T	647612	4478055	11	12T	645844	4478183
4	12T	647366	4478075	12	12T	645626	4478308
5	12T	647151	4478025	13	12T	645397	4478413
6	12T	646936	4478120	14	12T	645228	4478602
7	12T	646706	4478108	15	12T	645090	4478809
8	12T	646480	4478085				



Transect PJ002.
Access is on the Blue Mountain Road. Take the Blue Mountain Road Past the turn-off to the Chew Ranch (stay right on the Blue Mountain Road), to the Monument boundary. At the boundary, walk due south along a fence for 450 meters to point 1. Walk due east to points 2-3. Drop off of the ridge to point 4. Cross South Cub Creek and climb a steep ridge to point 5. Turn to 030 degrees, cross a small creek, and climb to a saddle between two buttes to point 6. To point 7, head due east and contour north of a butte. Continue east along the ridge to point 8 at the base of another butte. Skirt around the south side of the butte to point 9, at the base of the next butte. Continue east and contour around the north side of the butte and begin dropping off of the ridge to point 10. Continue east dropping of the ridge to point 11. Cross a sage and juniper meadow to point 12. Continue east uphill following the south ridge of a dry wash to points 13-15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ002 observation points:

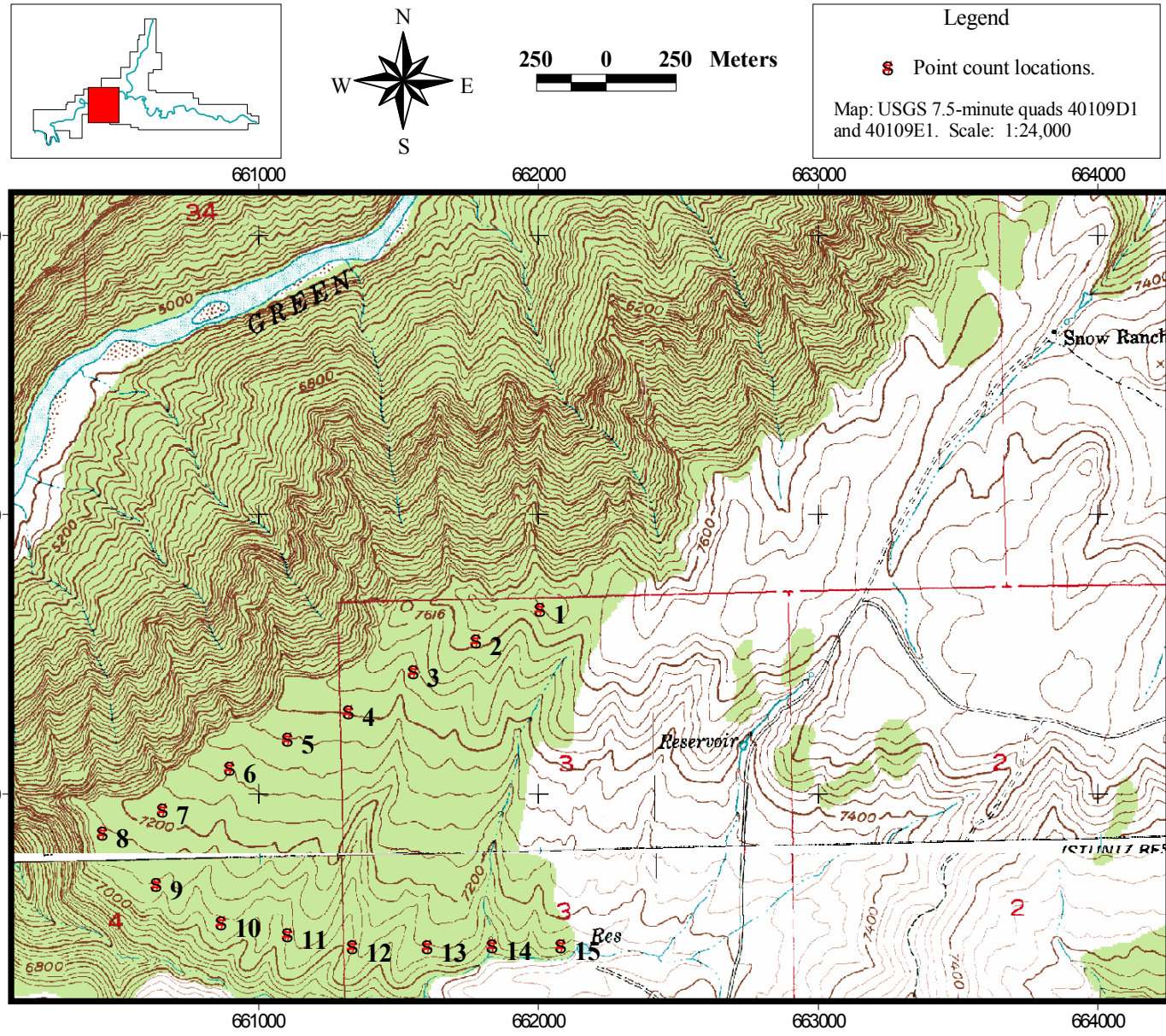
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	652663	4475256	9	12T	654567	4475209
2	12T	652910	4475212	10	12T	654824	4475188
3	12T	653161	4475202	11	12T	655077	4475183
4	12T	653413	4475142	12	12T	655325	4475152
5	12T	653664	4475183	13	12T	655567	4475089
6	12T	653839	4475364	14	12T	655821	4475087
7	12T	654095	4475376	15	12T	656068	4475041
8	12T	654341	4475301				



Transect PJ003.
Access is from the Harper's Corner Road. Take the Harper's Corner Road north into the Monument. Between the Iron Springs and Echo Park overlooks, find a two-track dirt road heading west. Take this road to a three-way junction. The road to the right leads to the Snow Ranch. The road to the left heads downhill into Snow Basin. Continue straight uphill (this road is not indicated on the map) to the end of the road. Walk 300 meters west into the Pinyon-juniper woodland to point 1. Points 1-8 follow a southwest line downhill, maintaining about 200 meters from the steep slope into Whirlpool Canyon and the Green River. At point 9, turn and contour southeast along an unnamed wash to points 10-15. Point 15 is 100 meters from a road in Snow Basin. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ003 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	662012	4485661	9	12T	660640	4484676
2	12T	661781	4485549	10	12T	660871	4484542
3	12T	661557	4485437	11	12T	661110	4484498
4	12T	661326	4485295	12	12T	661341	4484453
5	12T	661110	4485199	13	12T	661609	4484453
6	12T	660901	4485094	14	12T	661840	4484460
7	12T	660662	4484945	15	12T	662086	4484460
8	12T	660446	4484863				

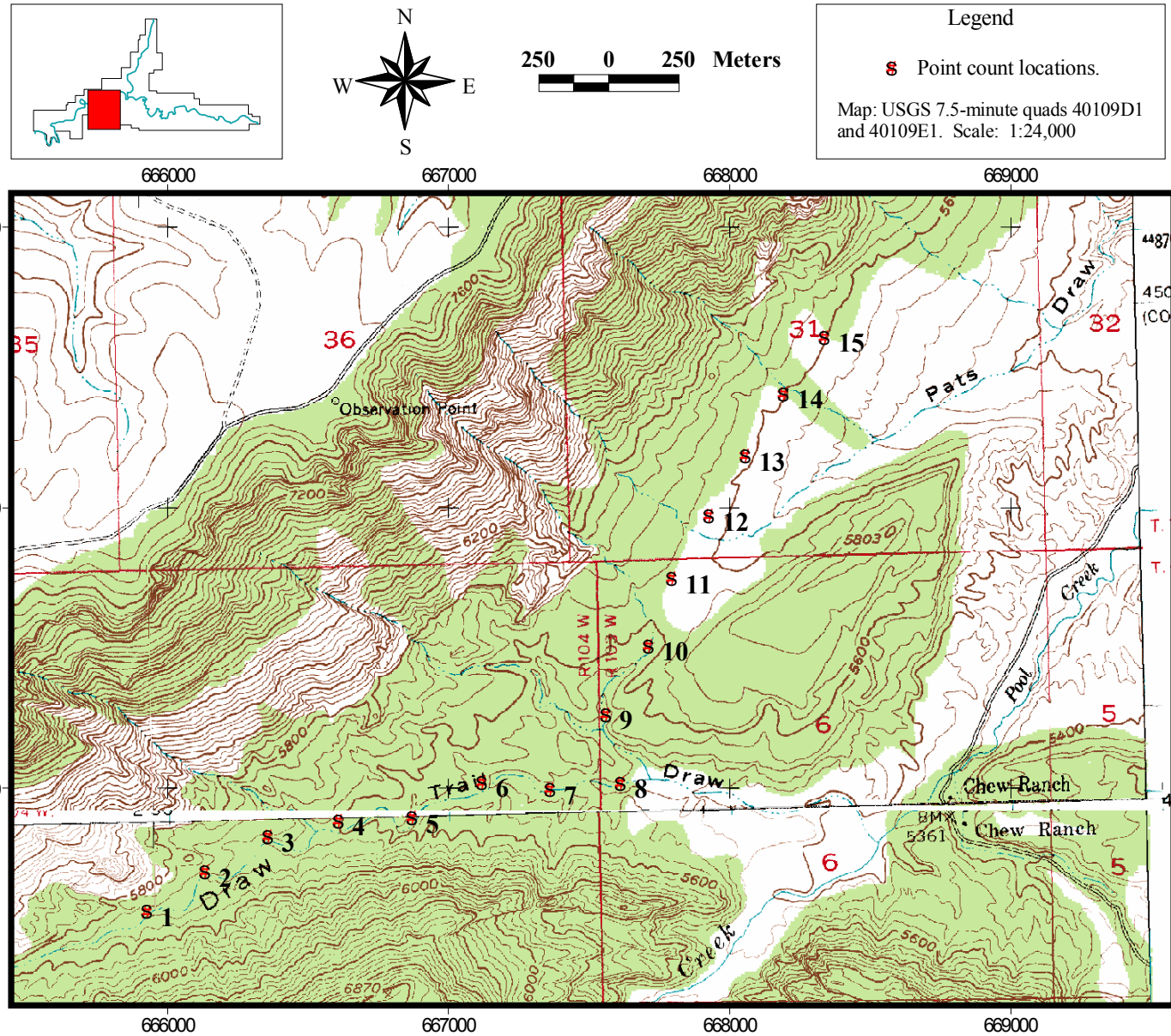


Transect PJ004.

Access is form the Echo Park Road. From the Harper's Corner Road, drop off of the plateau on the steep Echo Park Road. Continue through Sand Canyon to an intersection. Turn onto the road leading to Echo Park, and drive to the Chew Ranch Historical site. Park here. From the Chew Ranch, follow Trail Draw upstream 3 kilometers to point 1. Points 1-8 follow the dry Trail Draw downstream. At point 8, find a draw heading north, and follow this draw to points 9-10. At point 10, climb out of the draw and contour along the steep canyon wall to points 11-15. Points 11-15 are in sage/pinyon-juniper mix. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ004 observation points:

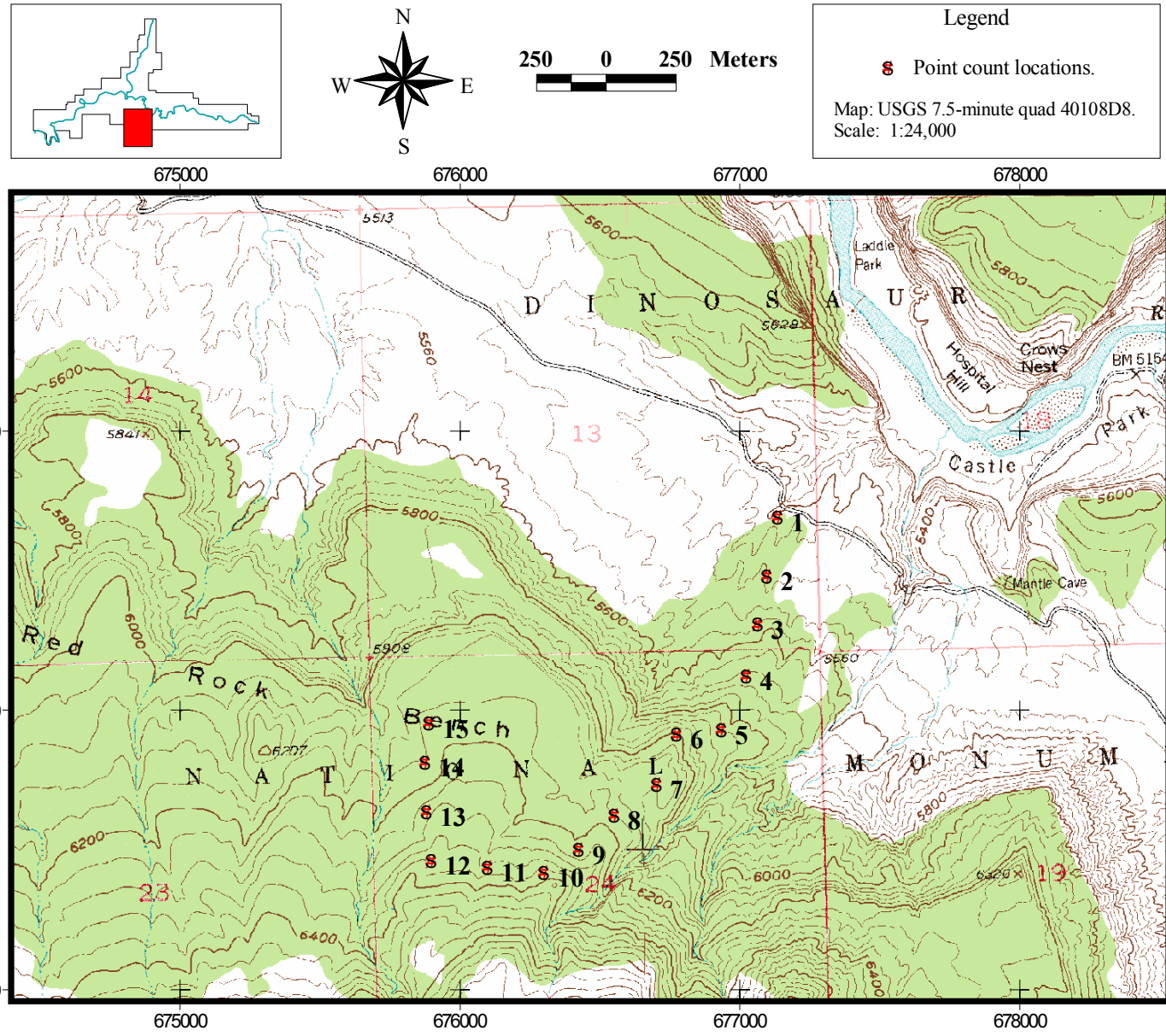
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	665931	4484562	9	12T	667565	4485264
2	12T	666139	4484702	10	12T	667716	4485509
3	12T	666362	4484829	11	12T	667800	4485750
4	12T	666612	4484886	12	12T	667932	4485972
5	12T	666876	4484895	13	12T	668061	4486186
6	12T	667124	4485024	14	12T	668196	4486408
7	12T	667365	4484997	15	12T	668341	4486610
8	12T	667617	4485020				



Transect PJ005.
Access is from the Mantle Ranch Road. From the intersection of the Echo Park and Mantle Ranch Roads, take the Mantle Ranch Road east for 6 miles. Park here and walk 50 meters at 192 degrees to point 1. Continue at 192 degrees up the Red Rock Bench to points 2-5. At point 5, turn west and continue up the ridge to point 6. At point 6, turn to 220 degrees and continue to points 7-10. Turn due west to points 11-12. Turn due north to points 13-15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ005 observation points:

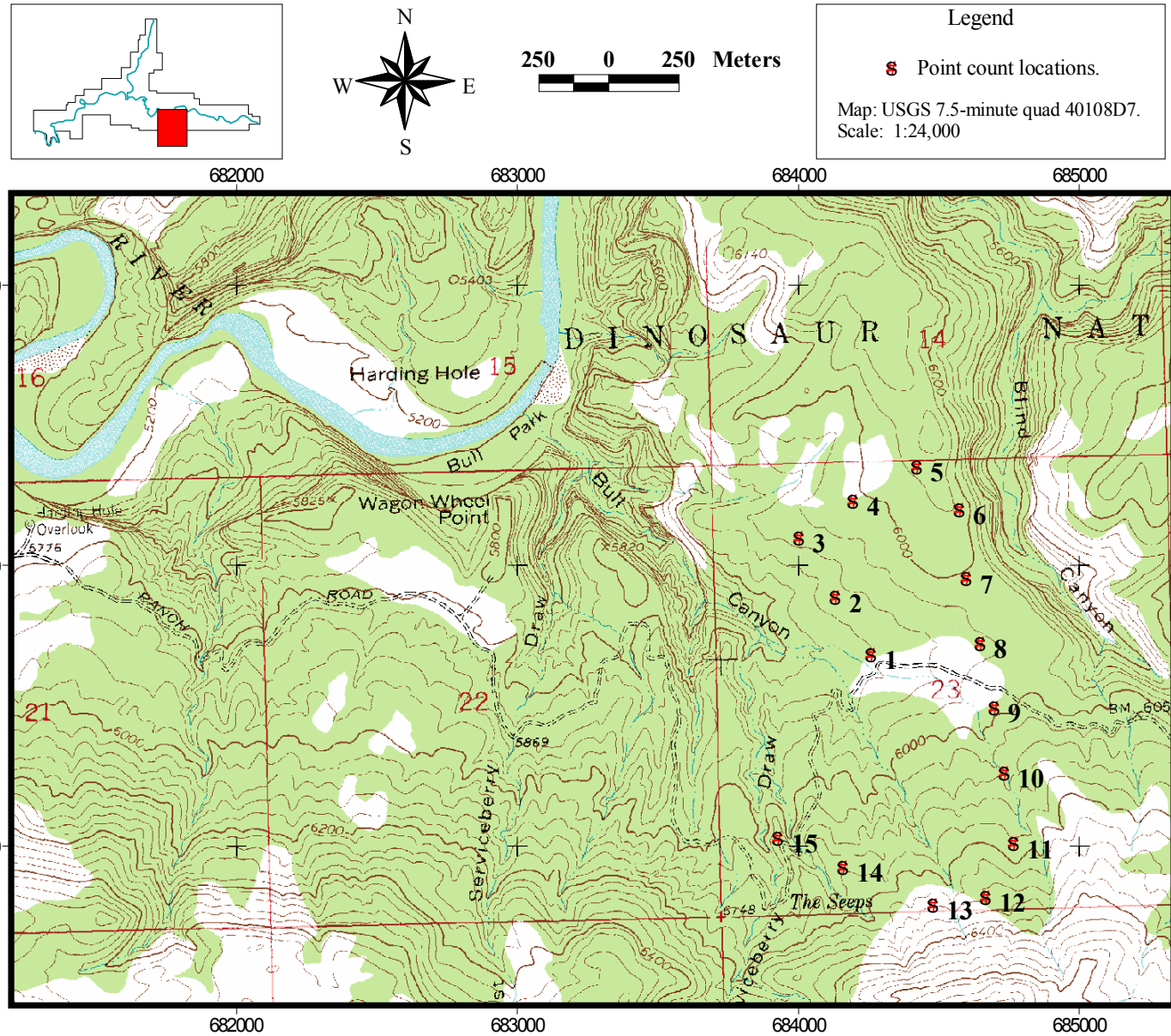
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	677139	4481692	9	12T	676429	4480503
2	12T	677102	4481483	10	12T	676303	4480422
3	12T	677069	4481310	11	12T	676104	4480441
4	12T	677027	4481124	12	12T	675902	4480462
5	12T	676939	4480932	13	12T	675886	4480640
6	12T	676778	4480916	14	12T	675879	4480815
7	12T	676706	4480736	15	12T	675894	4480955
8	12T	676554	4480626				



Transect PJ006.
Access is from the Mantle Ranch Road. Take the Mantle Ranch Road 2.5 miles west of Baker's Cabin. Walk 20 meters at 320 degrees to point 1. Continue at 320 degrees to points 2-3. Turn to 050 degrees to points 4-5. Turn to 130 degrees to point 6, which is at the cliff edge of Blind Canyon. Turn to 160 degrees to points 7-11 (cross the Mantle Ranch Road between points 8and 9). Turn to 198 degrees to point 12. Turn to 260 degrees to point 13, which is at the base of a steep hill. Turn to 280 degrees and walk downhill to points 14-15. Point 15 is on the Mantle Ranch Road at Serviceberry Draw. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ006 observation points:

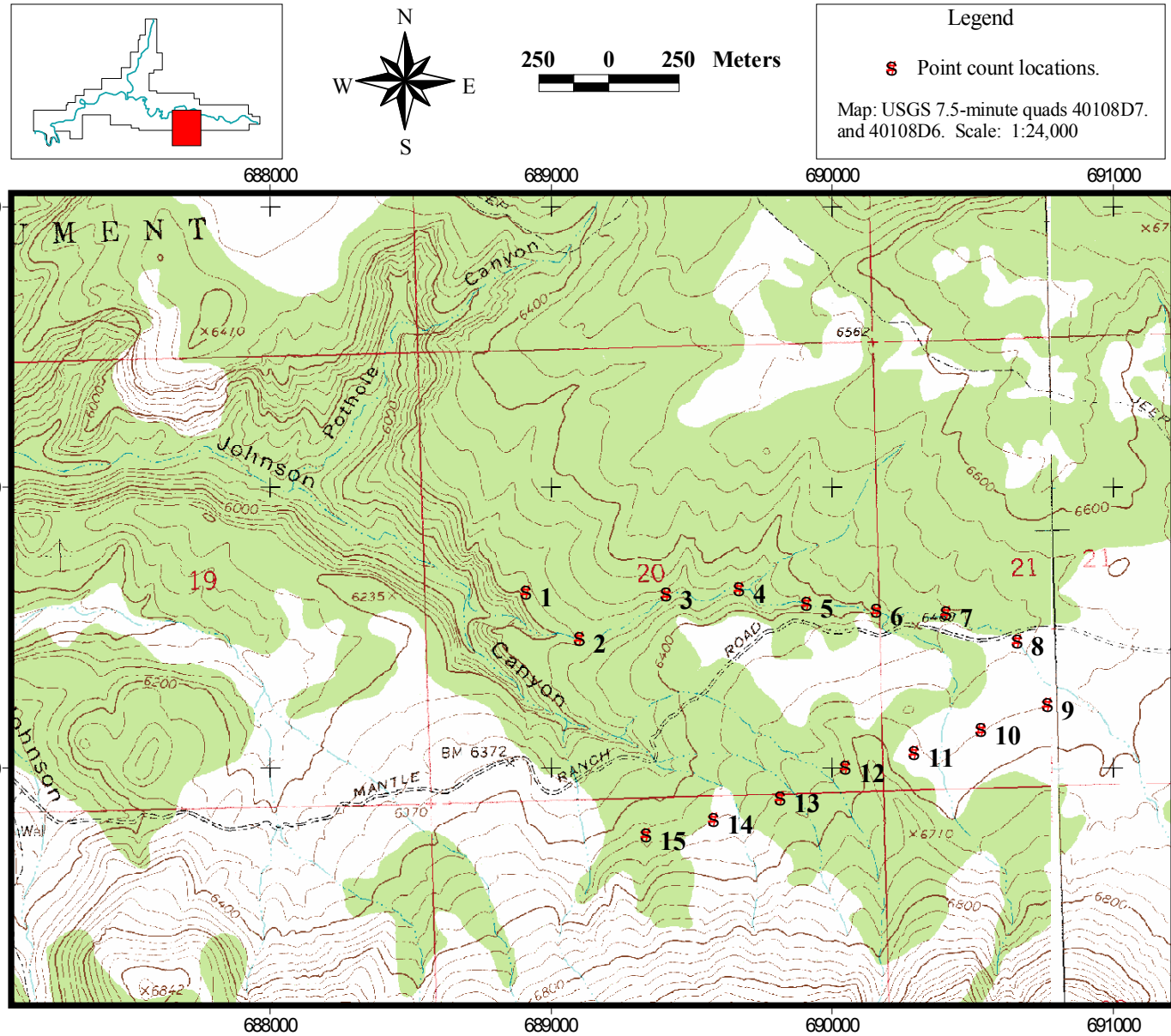
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	684263	4480684	9	12T	684702	4480495
2	12T	684135	4480887	10	12T	684737	4480263
3	12T	684007	4481101	11	12T	684769	4480010
4	12T	684200	4481231	12	12T	684670	4479819
5	12T	684425	4481354	13	12T	684482	4479792
6	12T	684578	4481201	14	12T	684164	4479927
7	12T	684601	4480956	15	12T	683932	4480030
8	12T	684652	4480724				



Transect PJ007.
Access is from the Mantle Ranch Road. Take the Mantle Ranch Road 2.5 miles east of Baker Cabin. Walk west 1.5 kilometer down the shallow drainage of Johnson Canyon. Point 1 is at the Johnson Canyon cliff edge. Points 1-7 follow the drainage back upstream. Be careful to take the right fork of the drainage at point 4. After point 7, climb out of drainage, cross the Mantle Ranch Road and continue at 089 degrees to point 8. At point 8, turn to 140 degrees to point 9, in the middle of a sage meadow. At point 9, turn to 230 degrees and follow this bearing on the hillside to points 9-15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ007 observation points:

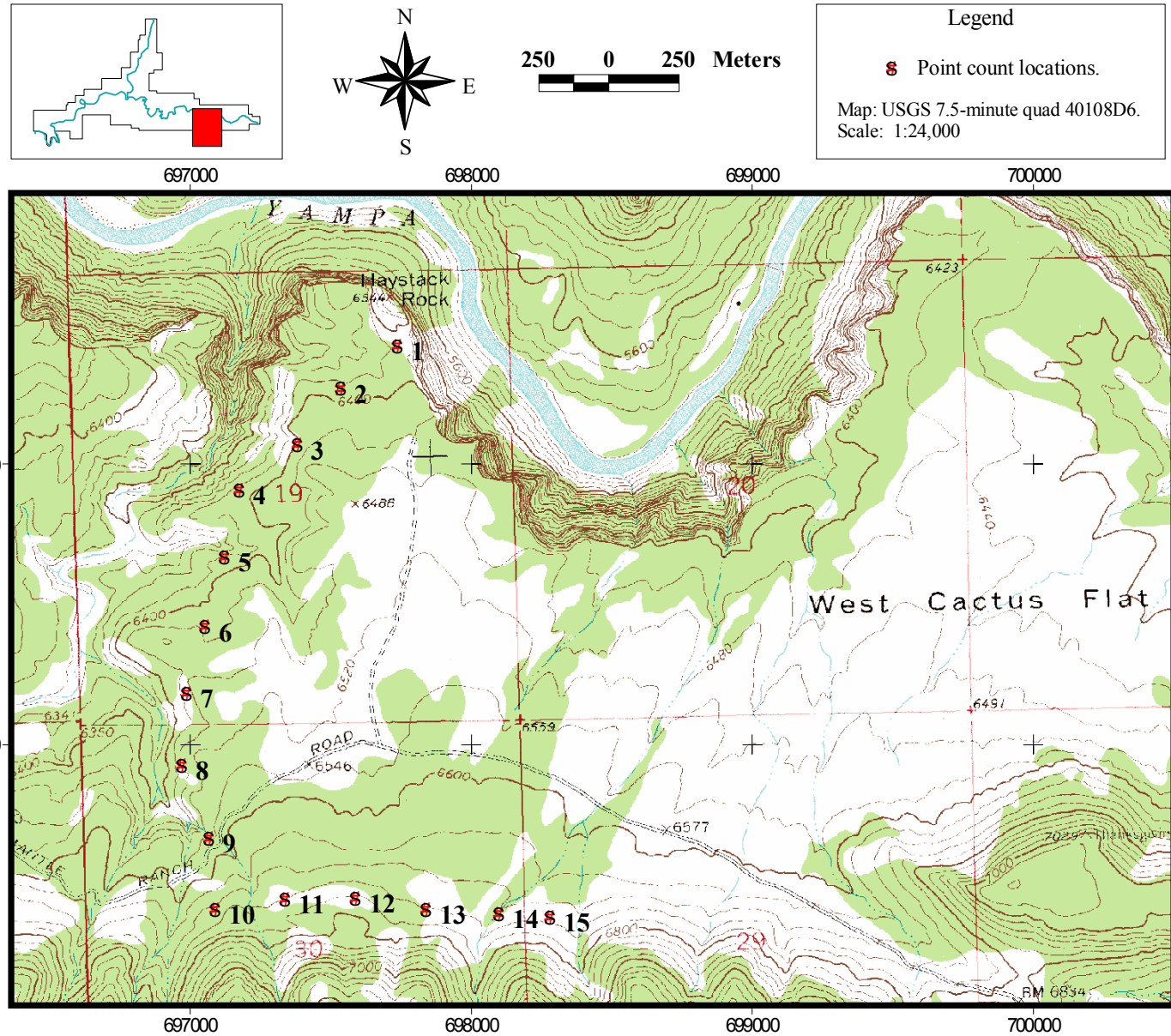
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	688916	4480628	9	12T	690772	4480227
2	12T	689105	4480462	10	12T	690535	4480137
3	12T	689414	4480621	11	12T	690297	4480057
4	12T	689674	4480639	12	12T	690051	4480004
5	12T	689915	4480588	13	12T	689821	4479896
6	12T	690163	4480561	14	12T	689583	4479818
7	12T	690411	4480555	15	12T	689342	4479761
8	12T	690665	4480454				



Transect PJ008.
Access and parking is at the intersection of the Mantle Ranch Road and a two-track road heading north toward Haystack Rock (UTM 12T 0697667 4480014). Hike to the base of Haystack rock to access point 1. Follow a bearing of 225 degrees to point 2; at 125m, cross a small gully. Between points 2 and 3, begin to skirt the left side of Bear Draw. Point 3 is at the cliff edge of Bear Draw. Follow a bearing of 215 degrees to point 4. In order to avoid the cliff edge, follow a bearing of 185 degrees to points 5, 6 and 7. Point 6 is in a sage meadow, and point 7 is at the cliff edge. Follow the contour of the cliff to point 8. Follow a bearing of 150 degrees to point 9. Point 9 is approx. 20m north of the Mantle Ranch Road. Cross the road and follow a bearing of 175 degrees to point 10. It is a steep climb to point 10. Follow a bearing of 090 degrees to points 11-15. Point 14 is in a small gully, and point 15 is at the edge of a sage meadow. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ008 observation points:

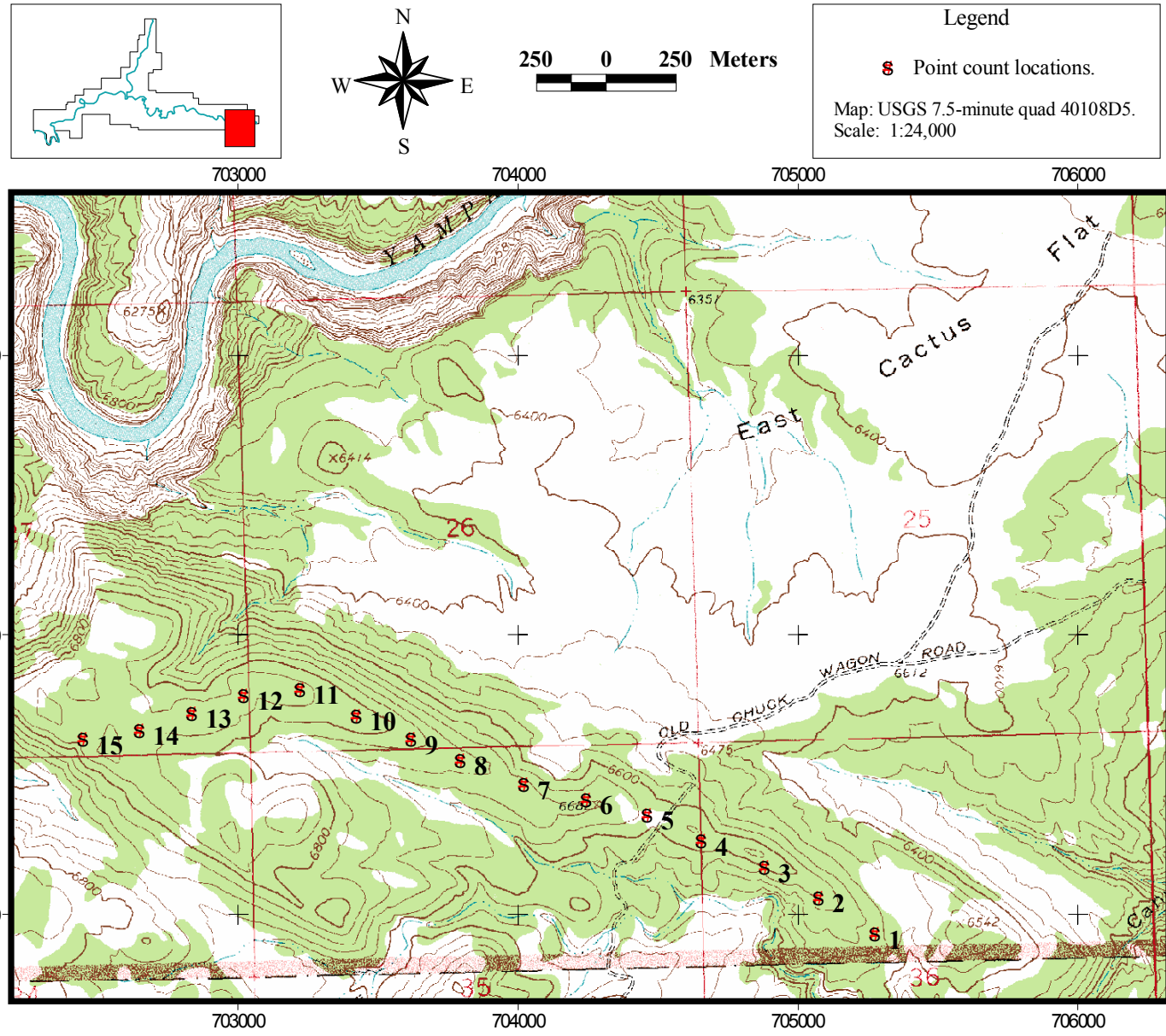
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	697741	4481422	9	12T	697070	4479669
2	12T	697541	4481272	10	12T	697092	4479415
3	12T	697385	4481069	11	12T	697341	4479450
4	12T	693178	4480910	12	12T	697593	4479453
5	12T	697126	4480669	13	12T	697844	4479415
6	12T	697057	4480423	14	12T	698102	4479399
7	12T	696991	4480184	15	12T	698286	4479388
8	12T	696975	4479929				



Transect PJ009.
Access is from the Bear Valley Road near Spurgion Cabin. Take the Mantle Ranch east past the Monument boundary to the intersection with the Bear Valley Road. Take the Bear Valley Road east to the Spurgion Cabin. Turn north onto a two-track dirt road at the Spurgion Cabin and continue north for about 2.5 miles to the locked gate at the Monument boundary. Walk uphill on the road to a saddle. At the saddle, turn southeast and walk the ridge 1 kilometer to the Monument Boundary. This is point 1. Points 1-11 follow the ridge northwest overlooking East Cactus Flat. Point 11 is at the ridge edge. At point 11, turn southwest and maintain the ridge to point 15. Point 15 is at the edge of a steep drop-off. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ009 observation points:

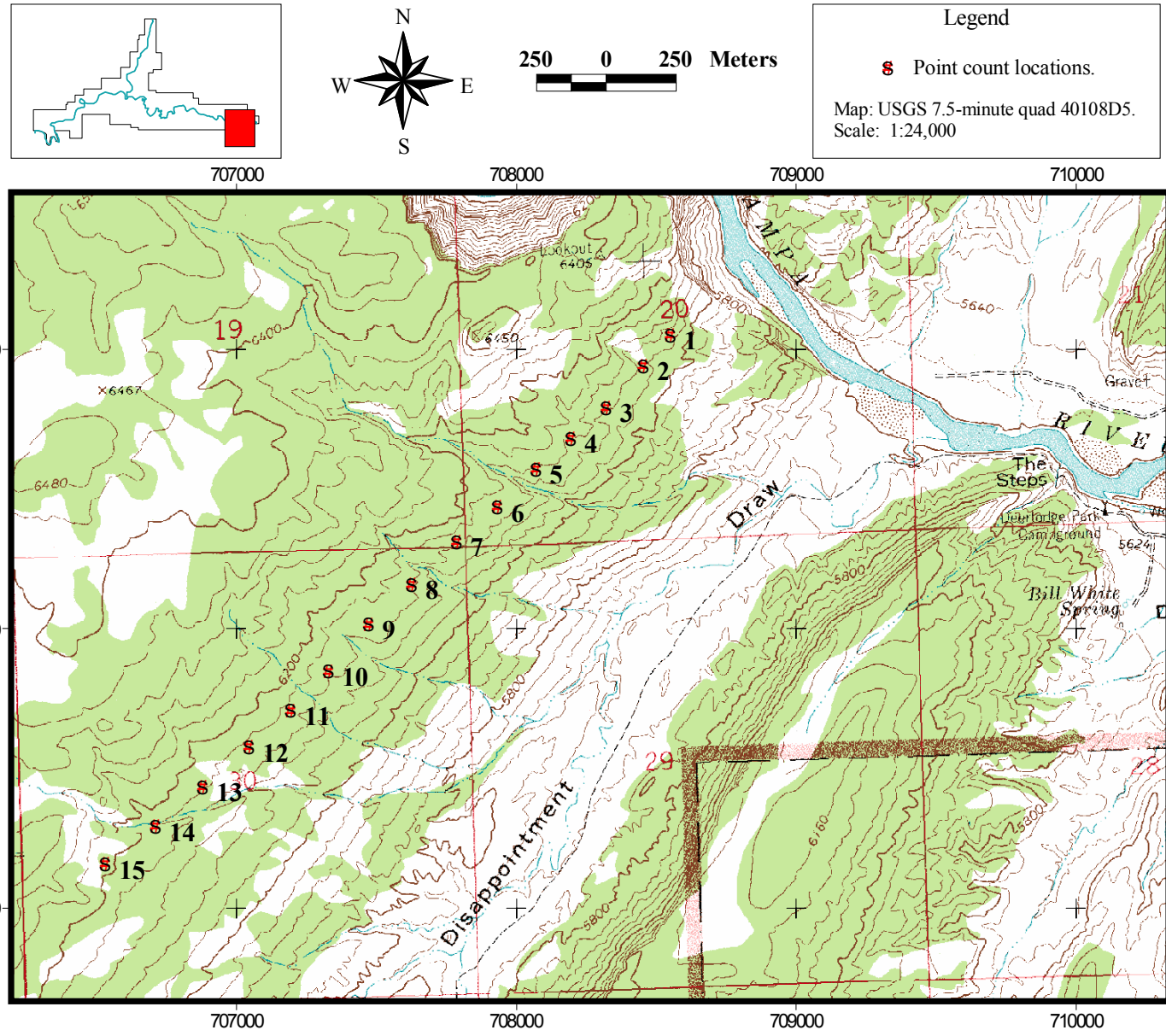
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	705281	4477930	9	12T	703621	4478628
2	12T	705079	4478062	10	12T	703427	4478713
3	12T	704885	4478170	11	12T	703226	4478806
4	12T	704660	4478264	12	12T	703024	4478783
5	12T	704466	4478357	13	12T	702838	4478721
6	12T	704249	4478411	14	12T	702652	4478659
7	12T	704024	4478465	15	12T	702450	4478628
8	12T	703800	4478551				



Transect PJ010.
Access is from Deerlodge Park. Take the Paved road to Deerlodge Park. Drive to the end of the road and park there. Walk a rough trail west from the parking lot along the Yampa River to Disappointment Draw. Find an old cabin near the Yampa River. From the cabin, walk 750 meters northwest up the ridge to point 1. The entire transect runs southwest as it contours the ridge. Cross small washes between points 5and 6, points 7 and 8, points 9 and 10, and points 10 and 11. Point 14 is in a small wash. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ010 observation points:

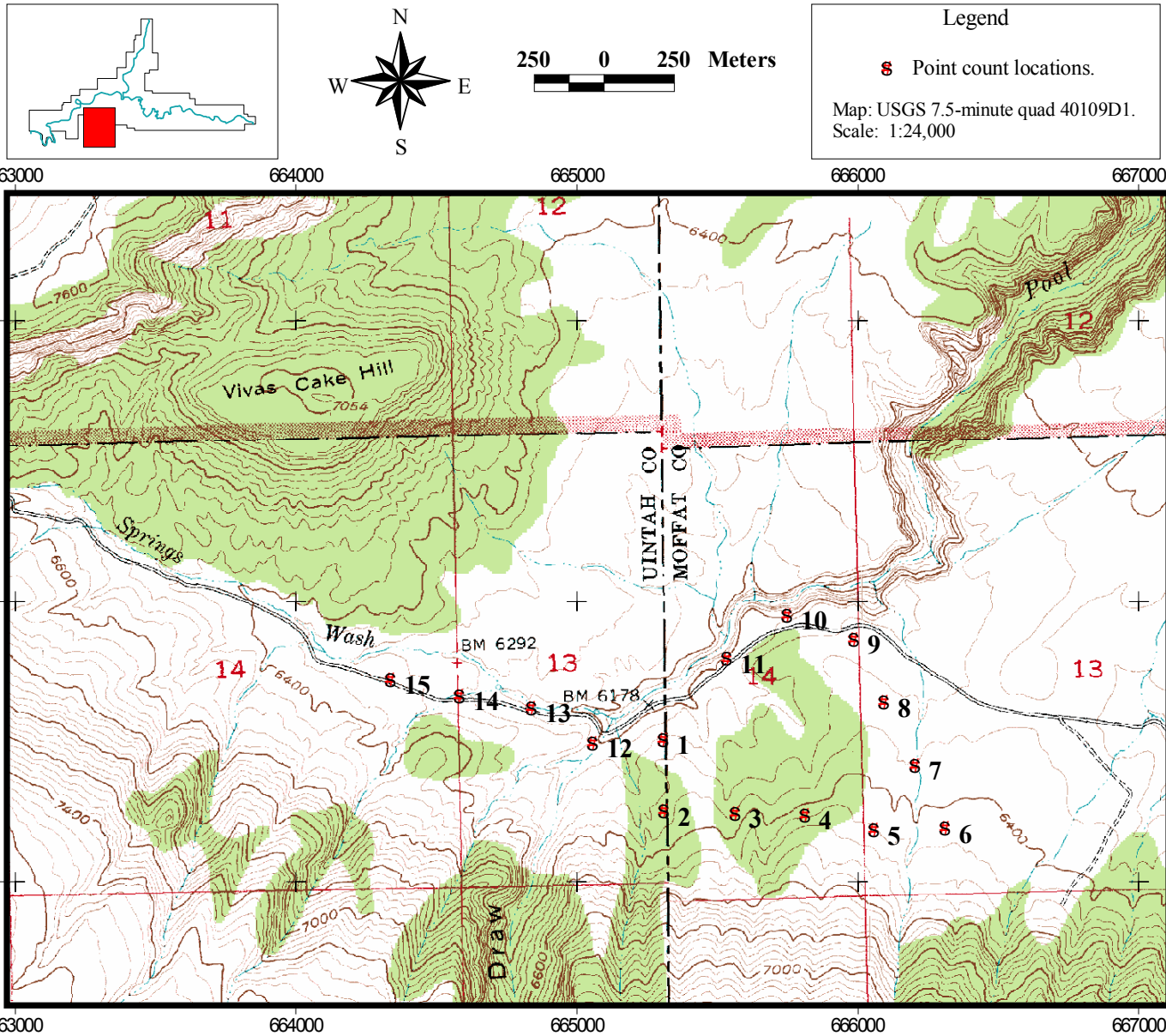
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	708557	4481053	9	12T	707477	4480017
2	12T	708458	4480942	10	12T	707335	4479850
3	12T	708328	4480794	11	12T	707199	4479708
4	12T	708199	4480683	12	12T	707051	4479578
5	12T	708075	4480572	13	12T	706884	4479436
6	12T	707939	4480436	14	12T	706717	4479294
7	12T	707791	4480313	15	12T	706538	4479159
8	12T	707631	4480158				



Transect PJ011.
Access is from the Echo Park Road where it crosses the Colorado/Utah Border. Park at the cattle guard at the state line / Monument boundary. Walk due south for 150 meters along the fence row to point 1, on the Monument side of the fence. Continue at 180 degrees to point 2, then turn to 90 degrees to point 3. Continue at 90 degrees to points 4-6. At point 6, turn to 335 degrees to points 7-9. At point 9, turn to 300 degrees to point 10. Cross the road between points 9 and 10. Point 10 is at the Pool Draw cliff edge. Follow the cliff edge at 230 degrees to point 11. Access the road at point 11 and walk along the road 550 meters (to maintain 250 meters from point 1) to point 12. Points 13-15 follow the road west. Point 15 is near the base of Vivas Cake Hill. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ011 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	665312	4481507	9	12T	665989	4481867
2	12T	665316	4481253	10	12T	665752	4481951
3	12T	665568	4481246	11	12T	665537	4481796
4	12T	665816	4481240	12	12T	665061	4481497
5	12T	666062	4481187	13	12T	664843	4481622
6	12T	666315	4481192	14	12T	664588	4481666
7	12T	666207	4481418	15	12T	664341	4481723
8	12T	666099	4481642				

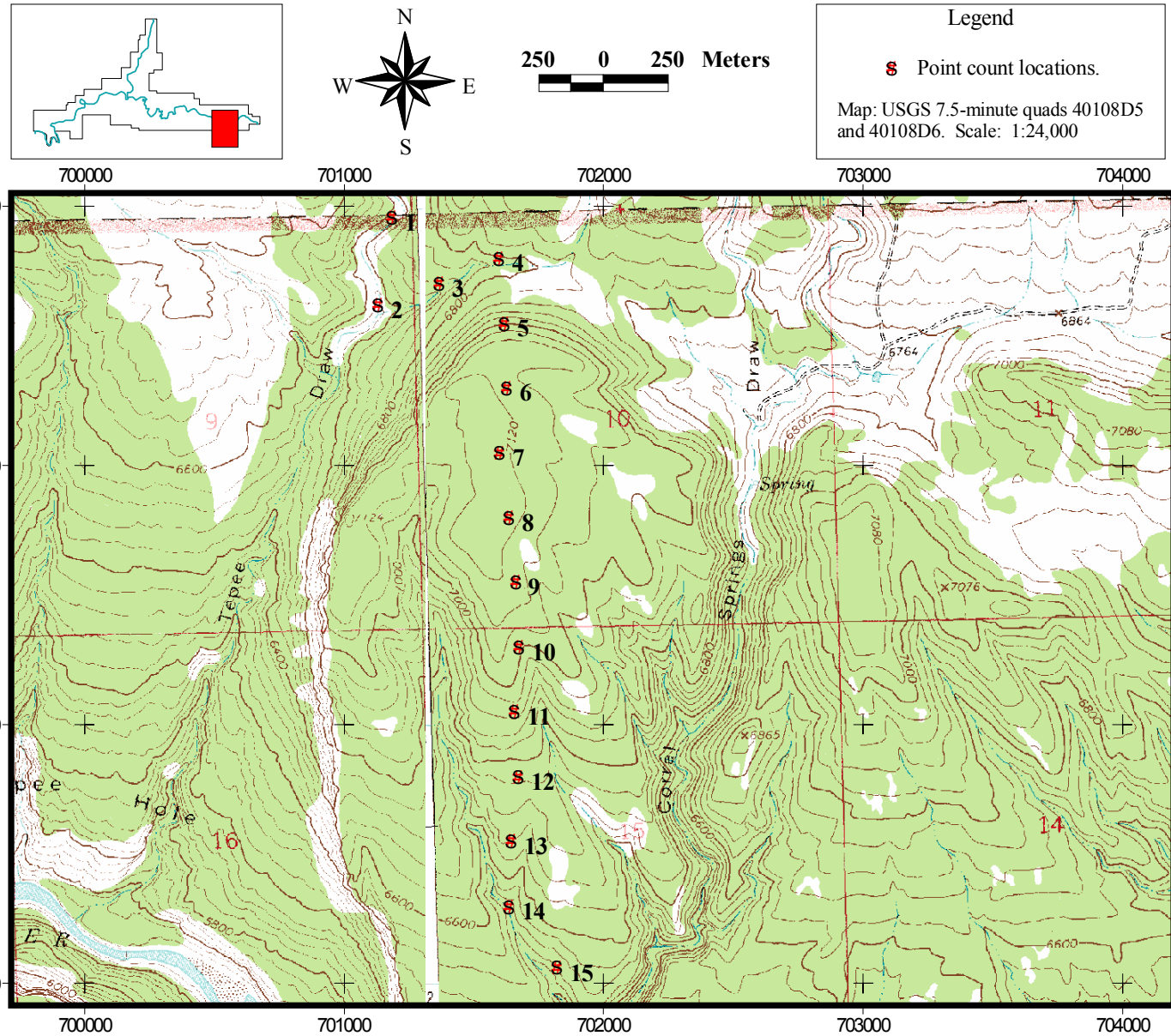


Transect PJ012.

Access is from Iron Mine Basin on Douglas Mountain. From the far east end of Iron Mine Basin, walk due east over a steep hill and cross Brown's Draw. At Brown's Draw, find a dirt road and walk this road east through a large sage meadow. Continue east after the road dies out, and drop into Tee Pee Draw. It is 4 miles from the east end of Iron Mine Basin to this point. In the Draw, find a large standing ponderosa; this is point 1. Walk down the creek to a side creek entering on the left; this is point 2. At point 2, turn east and follow the side creek upstream to points 3-4. At point 4, turn due south and start up a steep hillside. Continue up the now very steep hillside to point 5. Top off the hill at point 6. Continue due south to points 7-14. At point 14, drop into an arm of Corral Springs Draw. Follow the draw downstream to point 15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ012 observation points:

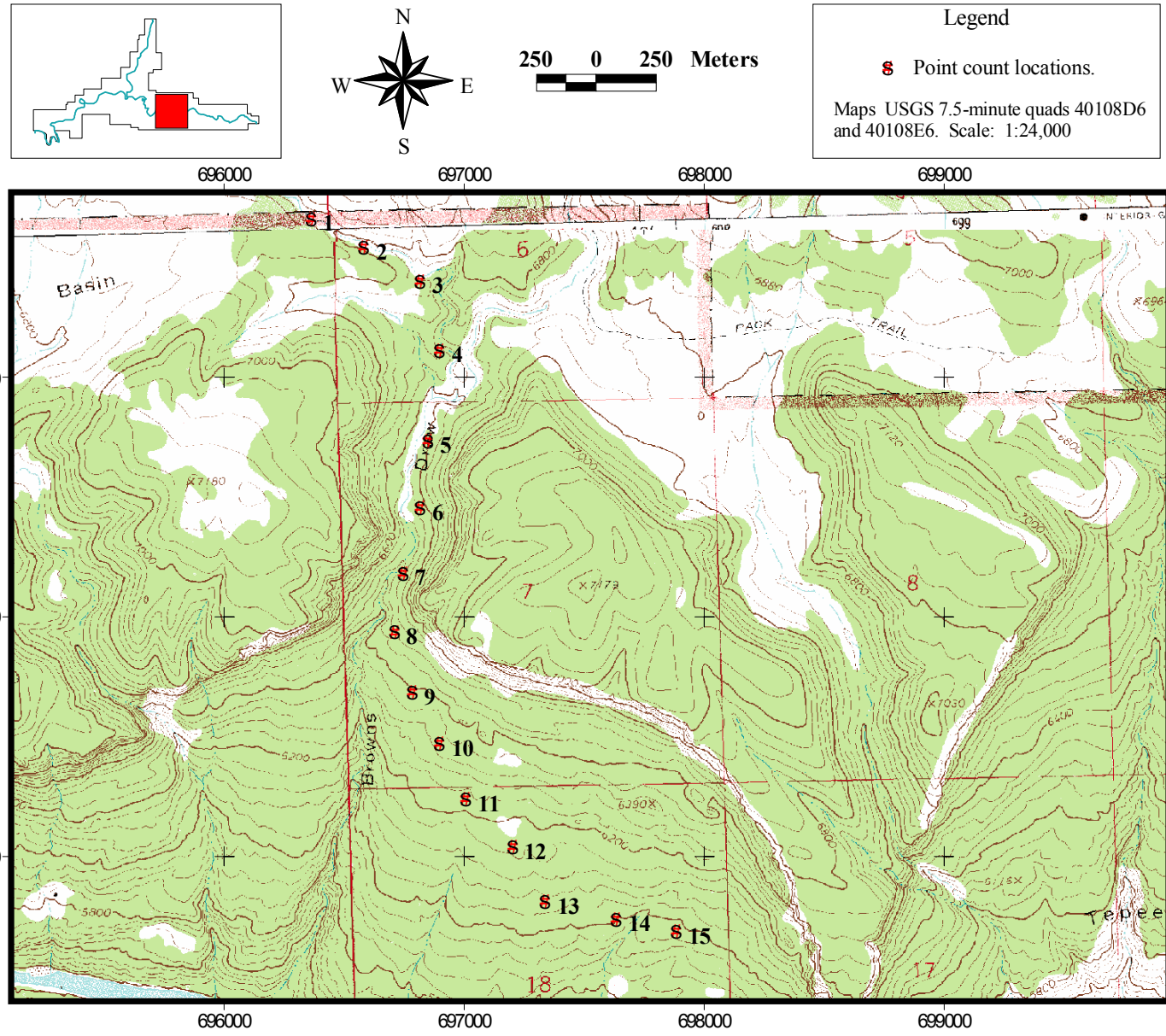
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	701189	4484958	9	12T	701666	4483552
2	12T	701136	4484621	10	12T	701679	4483300
3	12T	701372	4484705	11	12T	701661	4483053
4	12T	701603	4484801	12	12T	701677	4482800
5	12T	701622	4484550	13	12T	701649	4482551
6	12T	701631	4484302	14	12T	701641	4482298
7	12T	701606	4484051	15	12T	701826	4482064
8	12T	701640	4483800				



Transect PJ013.
Access is from the east end of Iron Mine basin. Follow the Monument boundary fence east to a small side draw draining into Brown's draw. Walk downstream 50 meters in the draw to point 1. Continue downstream in the side draw to points 2-4. Between points 4 and 5, the side draw joins Brown's Draw. Continue downstream in Brown's Draw to points 5-7. Between points 5 and 6, pass a large ponderosa. At point 7, begin contouring along the east canyon wall. At point 8, the canyon opens up. Follow a southeast line downhill to points 9-13. At point 13, turn east and contour to points 14-15. Point 14 is just before a small draw. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ013 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	696367	4485664	9	12T	696789	4483687
2	12T	696588	4485546	10	12T	696902	4483473
3	12T	696822	4485404	11	12T	697012	4483241
4	12T	696902	4485115	12	12T	697207	4483040
5	12T	696854	4484737	13	12T	697345	4482814
6	12T	696823	4484458	14	12T	697639	4482739
7	12T	696750	4484185	15	12T	697890	4482690
8	12T	696715	4483940				

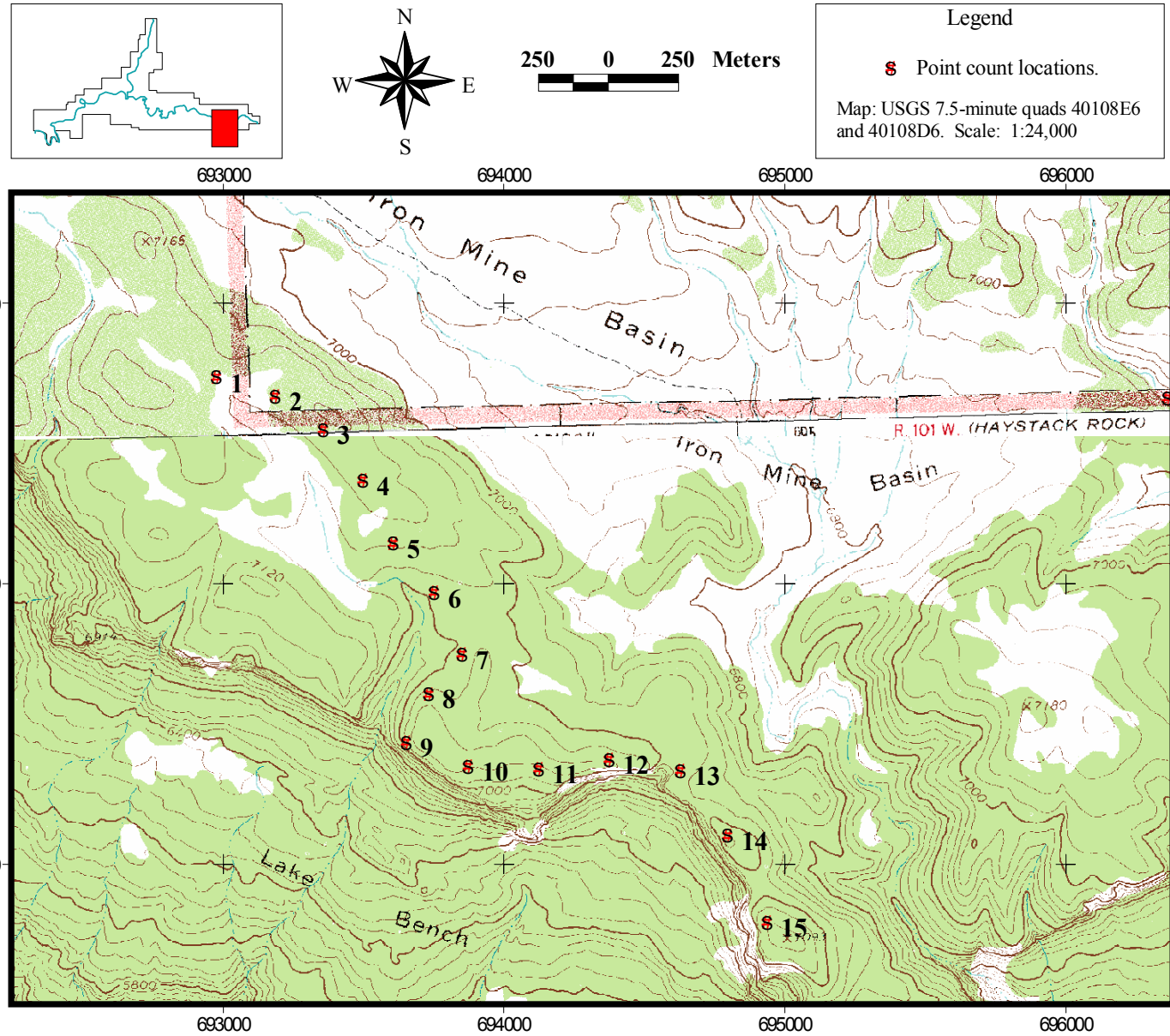


Transect PJ014.

Access is from Iron Mine Basin. Drive the four wheel drive road into Iron Mine Basin. The road will enter the Monument, quickly leave it, enter it again, leave it again, and enter a third time. Park where the road enters the Monument the third time and walk at 170 degrees along the boundary fence up the hill to the burned area. Point 1 is in the burned meadow. Maintain the top of the ridge in the middle of the pinyon-juniper stand for points 2-6. At point 6, reach a fairly large side canyon. Contour around the east side of the canyon to points 7-9. Point 9 is at the Lake Bench cliff edge, with the Yampa River visible below. Contour east along the cliff edge to points 10-13. Contour south along the cliff edge, and climb to the top of a hill to point 14. Continue uphill, almost to the crest of the highest hill (USGS point 7093) to point 15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ014 observation points:

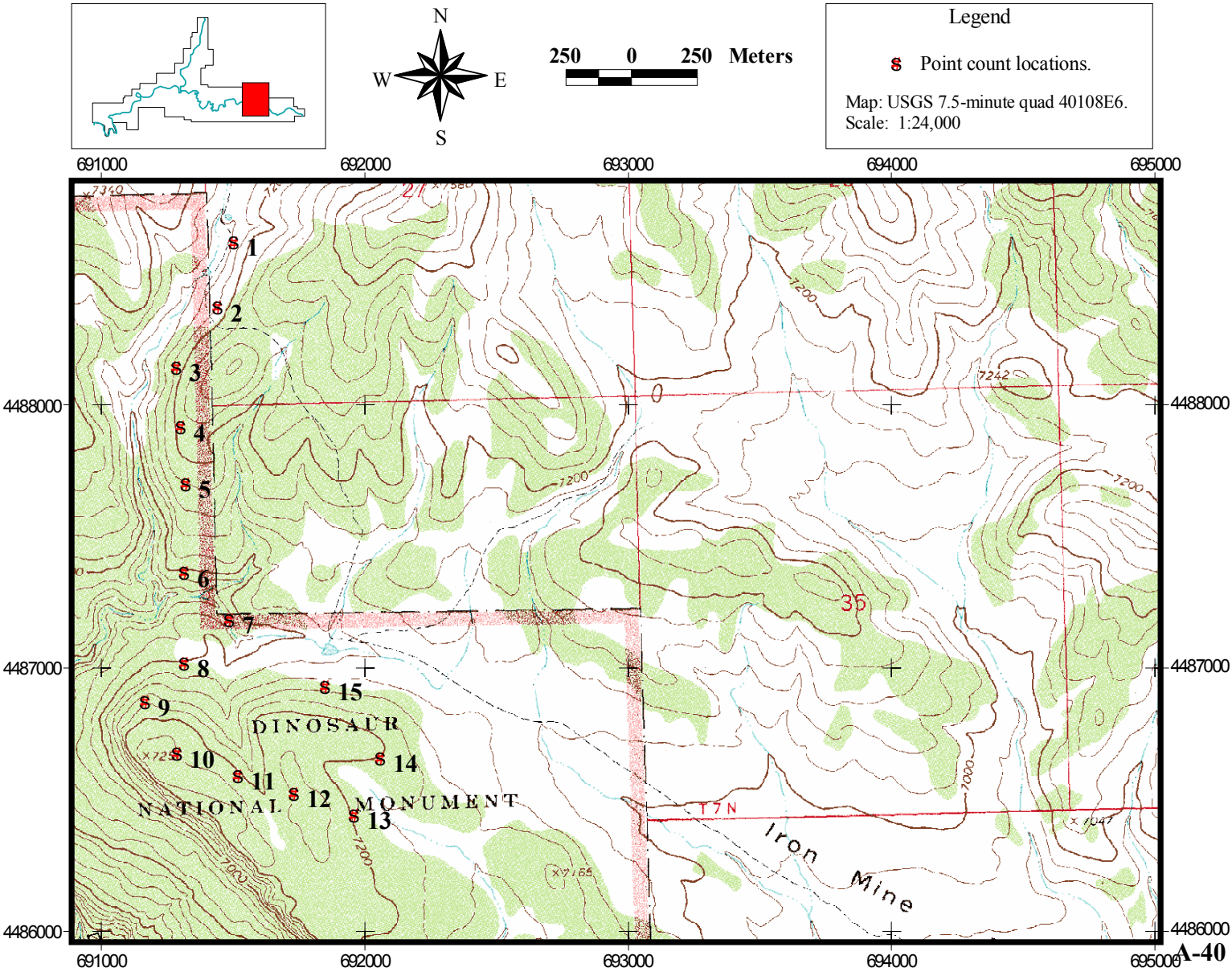
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	692982	4485738	9	12T	693657	4484435
2	12T	693190	4485671	10	12T	693877	4484349
3	12T	693361	4485553	11	12T	694128	4484341
4	12T	693503	4485369	12	12T	694378	4484374
5	12T	693611	4485147	13	12T	694634	4484335
6	12T	693755	4484969	14	12T	694802	4484105
7	12T	693854	4484750	15	12T	694942	4483796
8	12T	693737	4484608				



Transect PJ015.
Access is from the west end of Iron Mine Basin, near Bower Draw. Take the four wheel drive road leading to Iron Mine Basin. Park where the road enters the Monument the first time, near a small reservoir in Bower Draw. From the southeast corner of the dam in Bower Draw, walk 100 meters at 170 degrees to point one. Contour the hillside on the east side of Bower Draw to points 2-3. Follow a bearing of 180 degrees to point 2, and 204 degrees to point 3. Turn to 170 degrees to points 4-6. Follow a bearing of 120 degrees to point 7. At point 7, turn east and follow a bearing of 210 degrees to points 8-9. Follow a bearing of 146 degrees to point 10, 090 degrees to points 11-13, 010 degrees to point 14, and 320 degrees to point 15. Point 15 is above a small pond and gate at the Monument boundary. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ015 observation points:

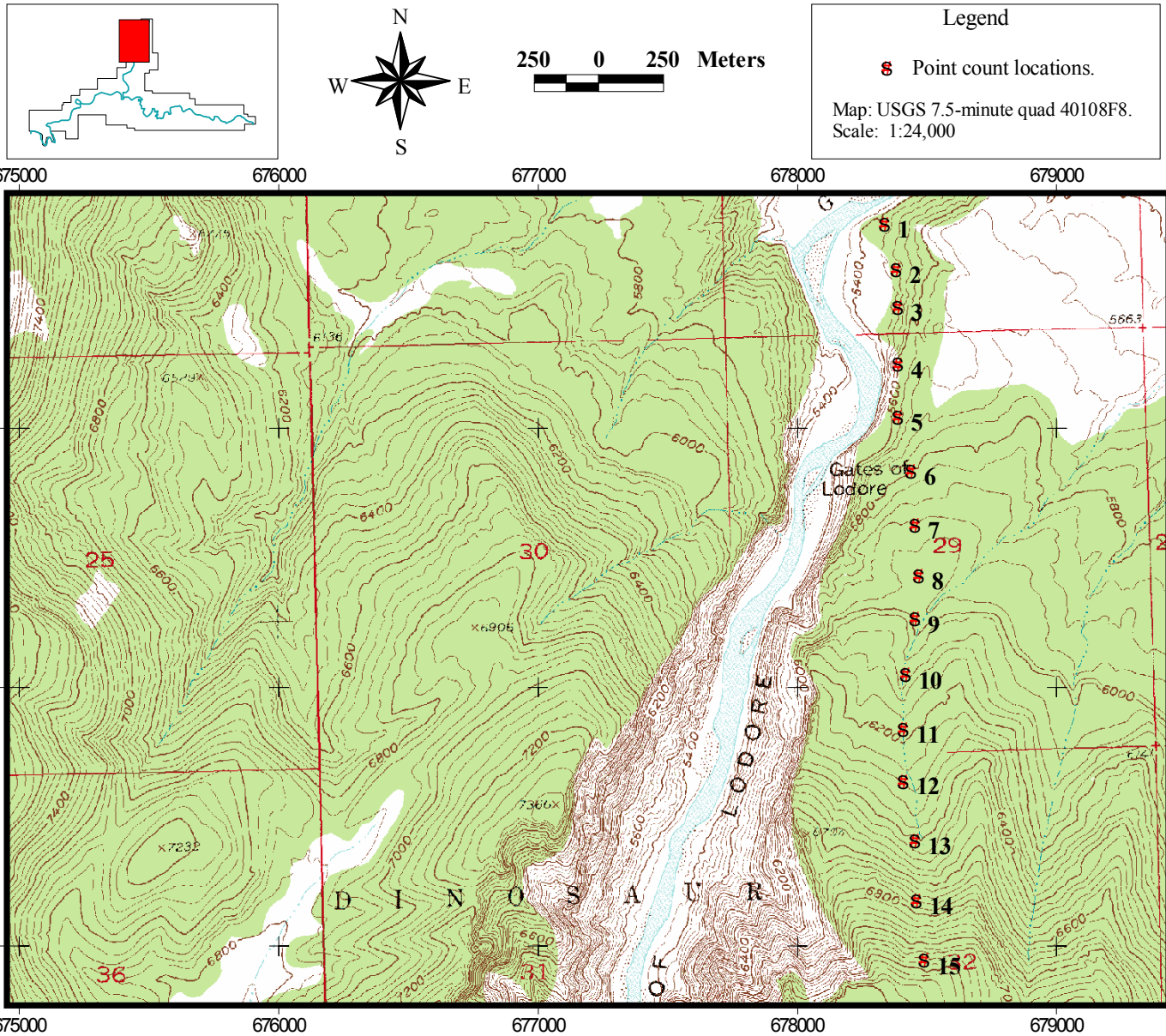
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	692982	4485738	9	12T	693657	4484435
2	12T	693190	4485671	10	12T	693877	4484349
3	12T	693361	4485553	11	12T	694128	4484341
4	12T	693503	4485369	12	12T	694378	4484374
5	12T	693611	4485147	13	12T	694634	4484335
6	12T	693755	4484969	14	12T	694802	4484105
7	12T	693854	4484750	15	12T	694942	4483796
8	12T	693737	4484608				



Transect PJ016.
Access is at the end of the road at the Gates of Lodore campground, at the beginning of the nature trail. The transect begins where the nature trail ends, and follows a due-south line up the very steep slope on the east side of the Canyon of Lodore. Points 1-8 are on a moderate slope. At point 9 find a fairly steep draw and follow it upstream to points 10-13. At point 13 the slope becomes very steep. The slope continues to become steeper to points 14 and 15. At point 15 the angle relents. This transect has serious fall potential; be careful. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ016 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	678343	4509787	9	12T	678459	4508265
2	12T	678387	4509614	10	12T	678423	4508049
3	12T	678394	4509469	11	12T	678415	4507840
4	12T	678394	4509246	12	12T	678415	4507638
5	12T	678394	4509044	13	12T	678459	4507407
6	12T	678444	4508835	14	12T	678466	4507176
7	12T	678459	4508626	15	12T	678495	4506946
8	12T	678473	4508431				

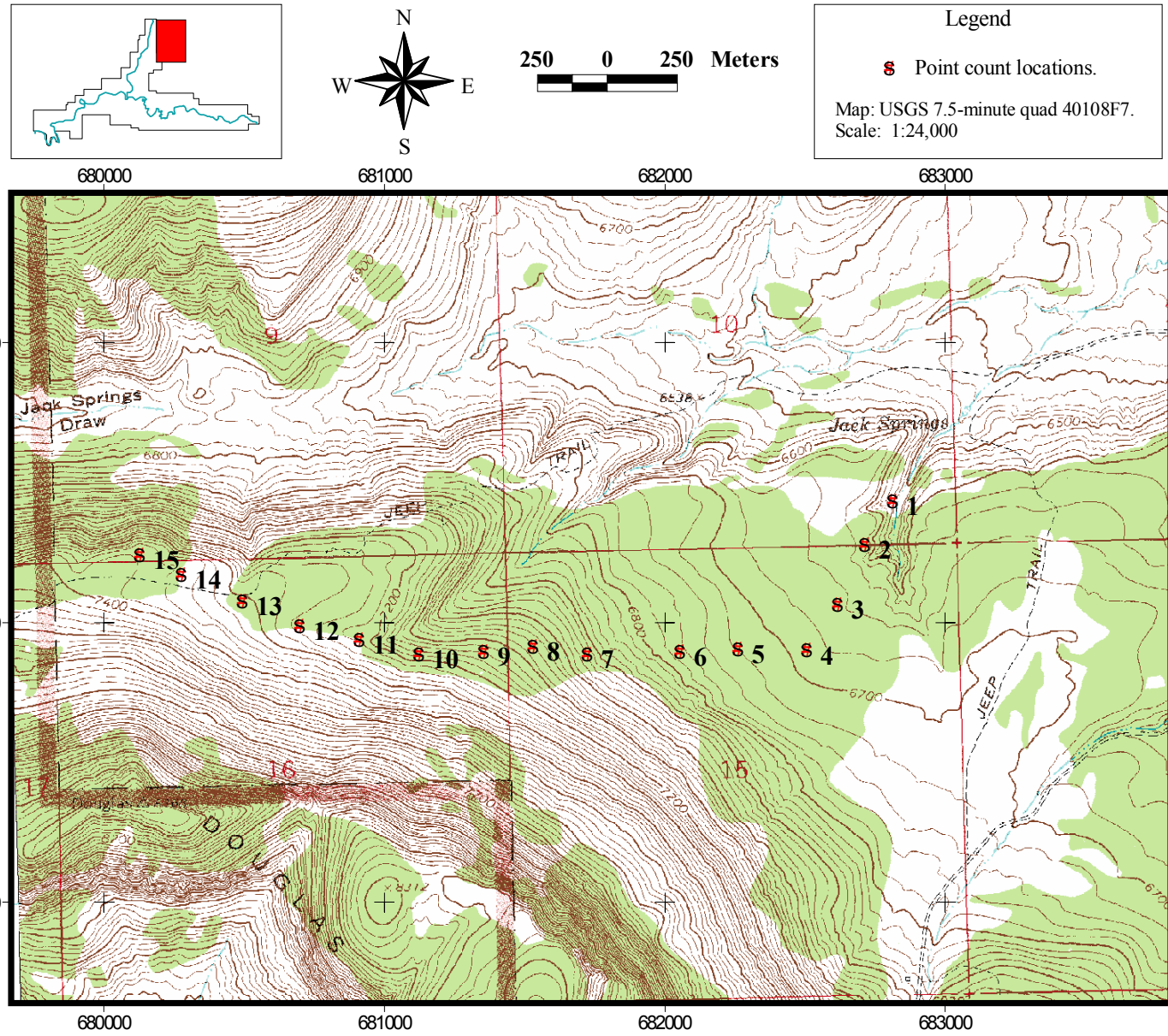


Transect PJ017.

This transect is near Jack Springs Draw. From Gates of Ladore Campground, take 34 road to 10 road and turn right. Take 10 road to 56 road and turn right. Take 56 road to a BLM gate (just past the intersection of 56 and 138 roads). Go through the gate and turn right onto a two-track. Follow the two-track to another gate, and follow a row of old fence posts south to a stream bed. Point 1 is in the center of the stream bed. From point 1, turn to 220 degrees and follow this bearing to points 2-4. Point 4 is next to a fence. From point 4, follow the fence at 275 degrees to points 5-13. At point 13, turn to 320 degrees and follow this bearing to points 14-15. Point 15 is overlooking the deep drop into Jack Springs Draw. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ017 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	682817	4502436	9	12T	681358	4501897
2	12T	682717	4502281	10	12T	681127	4501889
3	12T	682622	4502066	11	12T	680915	4501942
4	12T	682512	4501904	12	12T	680702	4501991
5	12T	682266	4501908	13	12T	680498	4502079
6	12T	682058	4501896	14	12T	680279	4502172
7	12T	681728	4501889	15	12T	680132	4502245
8	12T	681534	4501917				

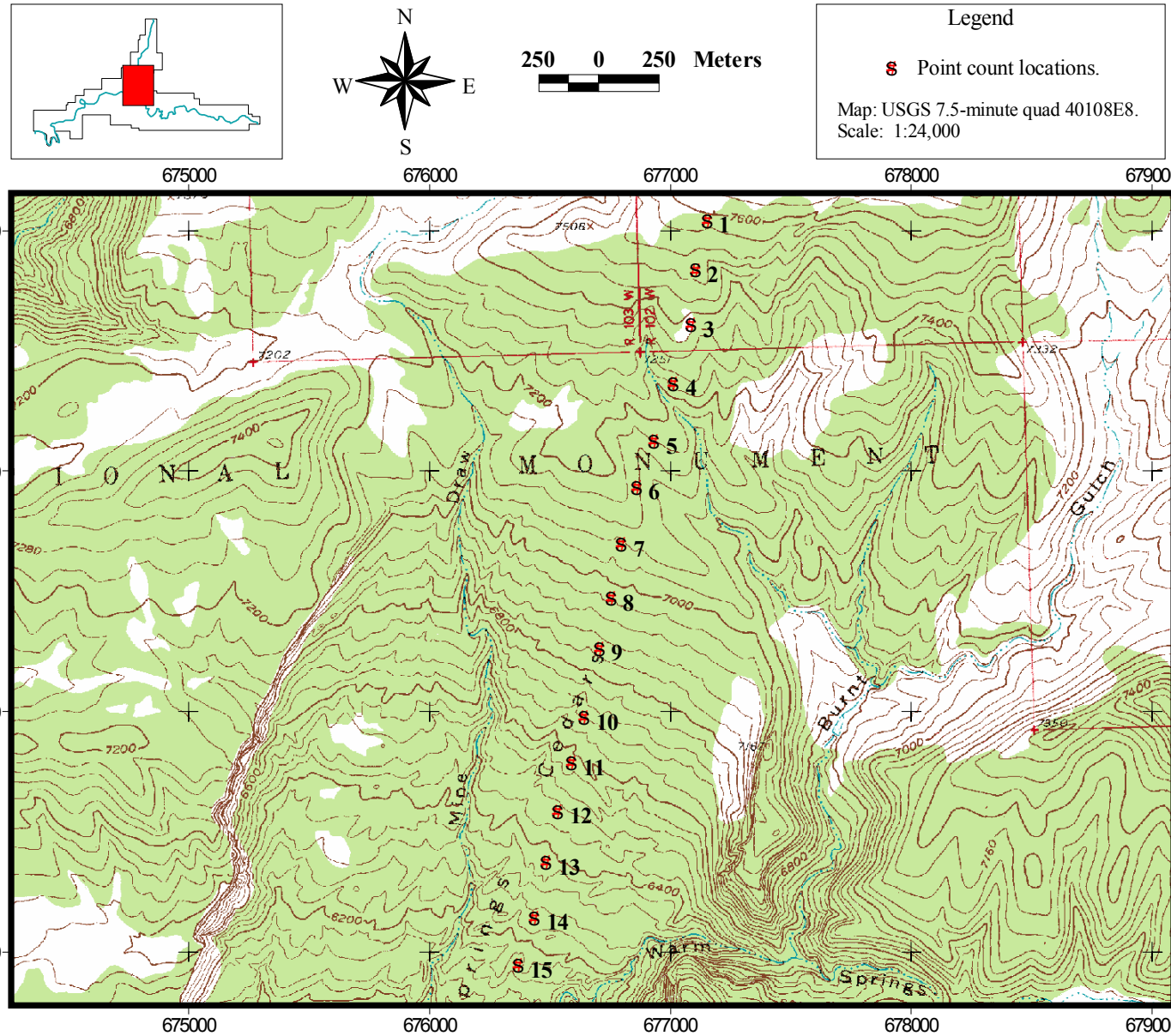


Transect PJ018.

Access is from the Zenobia Basin Road on Douglas Mountain. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the park near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Park at the boundary and walk due south up the hill for 700 meters to point 1at the slope of Warm Springs Cedars. The transect follows a southwest line down the slope of Warm Springs Cedars. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ018 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	677158	4493044	9	12T	676711	4491265
2	12T	677110	4492838	10	12T	676648	4490977
3	12T	677091	4492612	11	12T	676595	4490789
4	12T	677019	4492366	12	12T	676538	4490587
5	12T	676937	4492126	13	12T	676490	4490376
6	12T	676865	4491934	14	12T	676442	4490145
7	12T	676802	4491698	15	12T	676374	4489948
8	12T	676759	4491472				

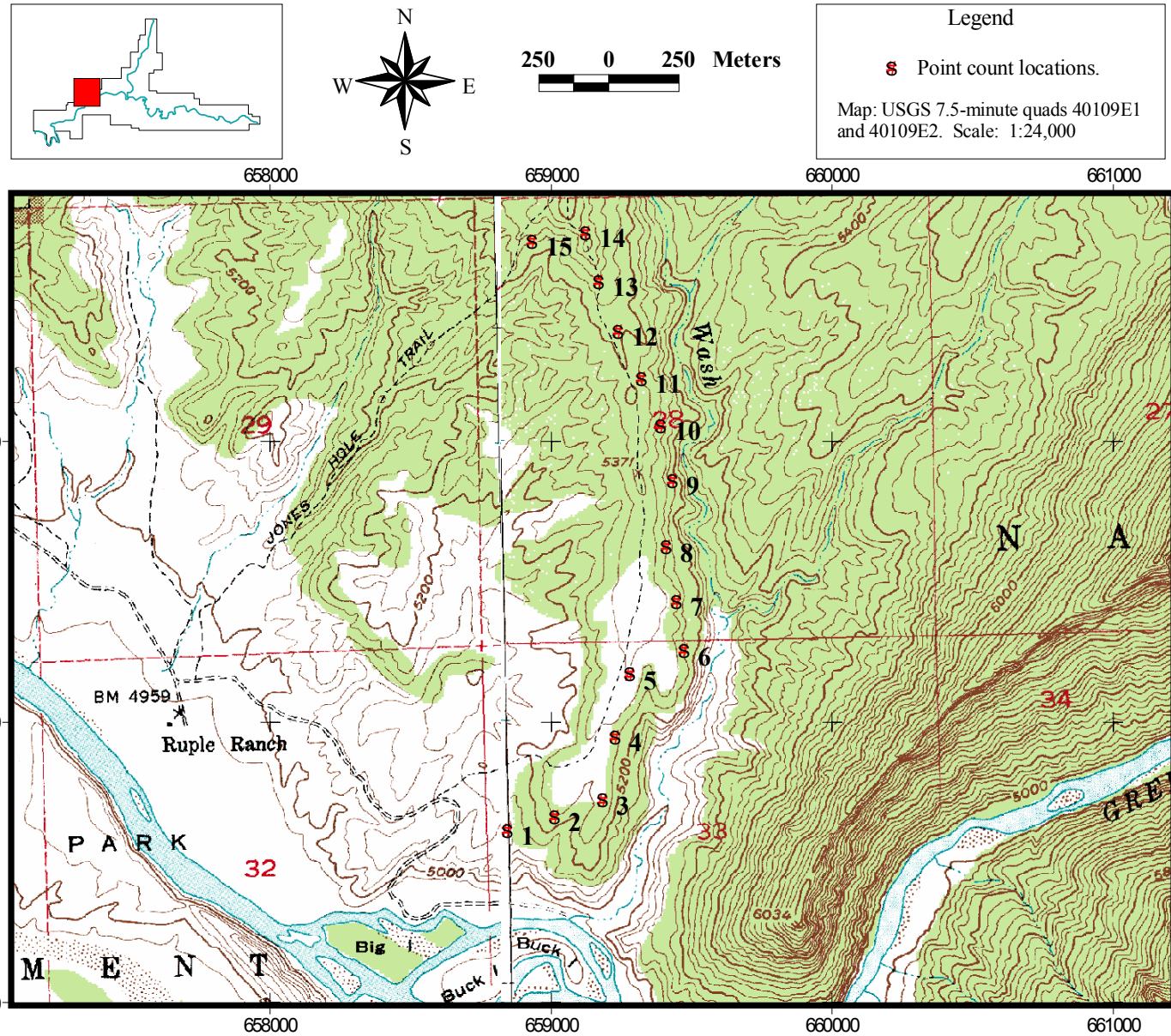


Transect PJ019.

Access is from the north end of Island Park. Take the Island Park Road past the historic Ruple Ranch. Continue on the road until it dead ends (the road forms a circle at its end). There is an old cabin east of the road. From the cabin, walk 250 meters at 060 degrees to point 1. Find and old two track dirt road headed up hill and follow it at 250 degrees to point 3. Turn to 005 degrees to points 4 and 5. Point 5 is in a sage/grass meadow. At point 5, leave the two-track road and head at 070 degrees to the edge of the hillside to point 6. At point 6 turn to 350 degrees and follow this bearing to points 7 and 8. At point 8, turn to 010 degrees and follow this bearing to point 9. At point 9, turn to 340 degrees and follow this bearing to points 10-14. At point 14 turn to 240 degrees and follow this bearing to point 15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ019 observation points:

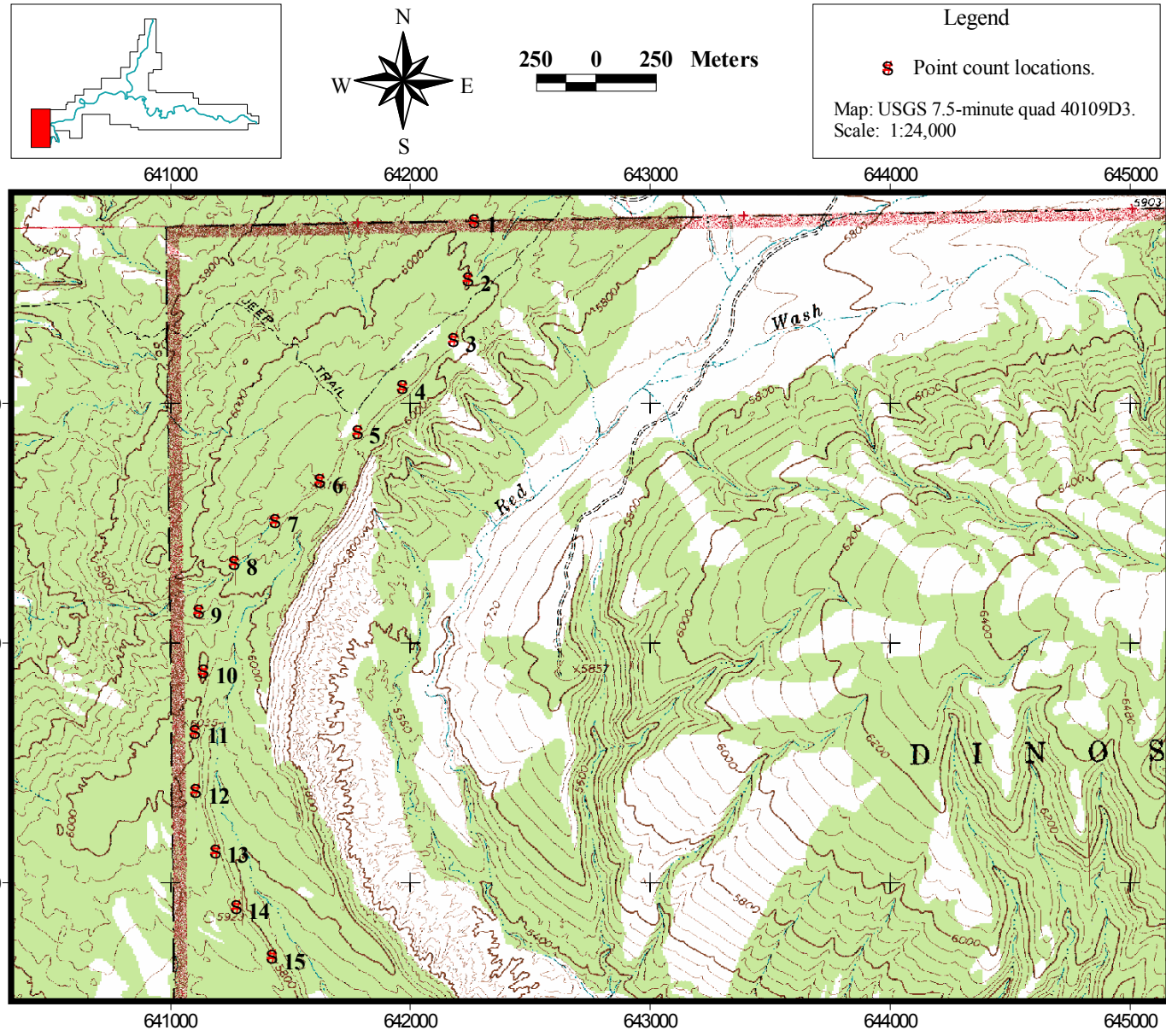
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	658849	4486617	9	12T	659436	4487862
2	12T	659016	4486663	10	12T	659395	4488059
3	12T	659189	4486723	11	12T	659325	4488228
4	12T	659233	4486950	12	12T	659244	4488395
5	12T	659284	4487172	13	12T	659175	4488572
6	12T	659477	4487257	14	12T	659127	4488746
7	12T	659451	4487433	15	12T	658937	4488716
8	12T	659413	4487627				



Transect PJ020.
Access is from the Island Park road west of Rainbow Park. From the intersection of the Island Park Road and the Brush Creek Road, drive east on the Island Park Road 4 miles. Find a two-track dirt road heading south. Turn onto the road and follow it to a parking area just before it begins to climb steeply. The road is very sandy. Walk uphill along the road for 1 kilometer to the Monument boundary. Point 1 is at the boundary fence. Follow a bearing of 182 degrees to point 2. Continue at 182 degrees to point 3, and reach the cliff edge of Red Wash. At this point, follow the contour of the cliff southwest to points 3-7. Between points 7 and 8, stay on the right (north) ridge and continue contouring. Cross a small creak between points 8-9 and regain the ridge. Continue to follow the ridge as it curves around southward to point 15. Point 15 is about 800 meters north of peak 5842 (USGS). This is a very scenic transect. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ020 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	642272	4483767	9	12T	641124	4482134
2	12T	642246	4483523	10	12T	641143	4481885
3	12T	642186	4483271	11	12T	641107	4481634
4	12T	641974	4483071	12	12T	641112	4481385
5	12T	641785	4482886	13	12T	641193	4481135
6	12T	641628	4482682	14	12T	641280	4480902
7	12T	641443	4482516	15	12T	641428	4480693
8	12T	641272	4482339				

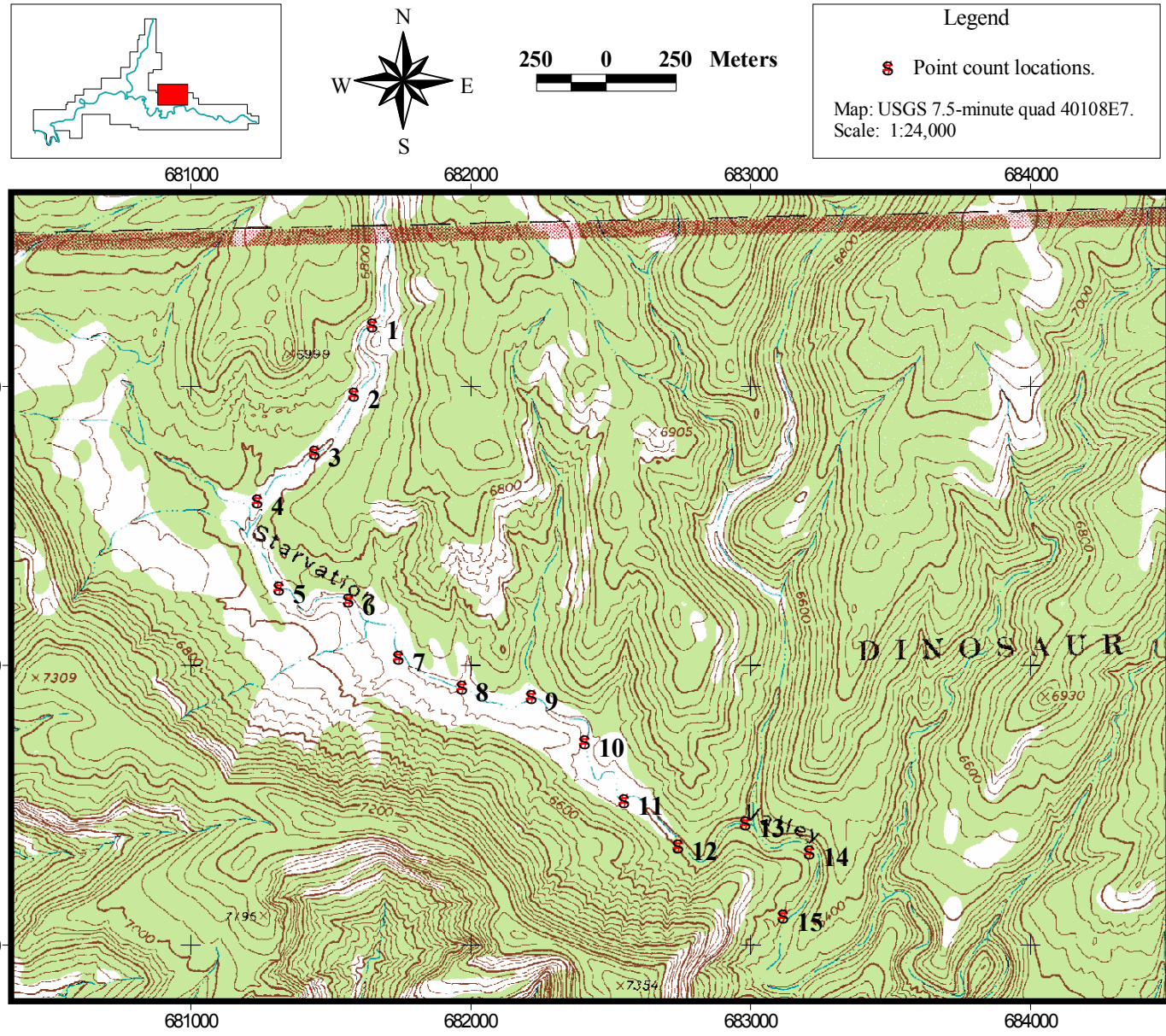


Transect PJ021.

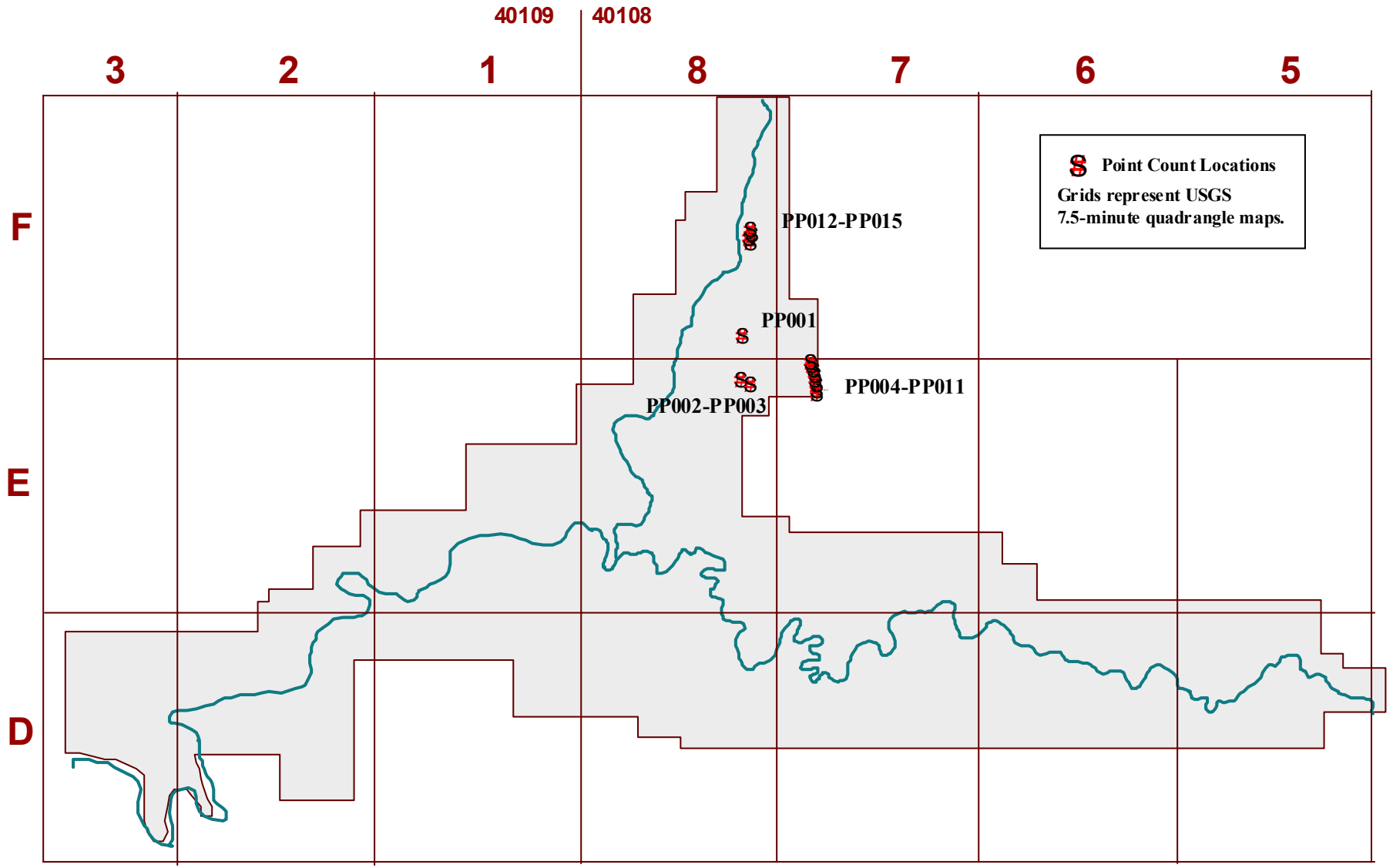
Access is at Brown's Cabin in Big Joe Draw. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the park near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. At Brown's Cabin, walk or drive the rough four wheel drive road 5 kilometers down Big Joe Creek. At this point the creek is heading due south with a large hill directly in front of you. Follow the creek until it turns to 205 degrees. This is the starting point. There is no park boundary fence or sign to indicate you have entered the Monument. The transect follows Starvation Valley and Big Joe creek downstream for its entirety. At point 6 the valley opens up. At point 12 it becomes very narrow and remains so to point 15. All points are spaced at 250 meter intervals.

UTM locations of Transect PJ021 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
1	12T	681655	4488220	9	12T	682222	4486890
2	12T	681588	4487975	10	12T	682413	4486727
3	12T	681447	4487765	11	12T	682554	4486518
4	12T	681243	4487591	12	12T	682747	4486355
5	12T	681320	4487278	13	12T	682985	4486438
6	12T	681569	4487234	14	12T	683215	4486336
7	12T	681748	4487030	15	12T	683122	4486103
8	12T	681974	4486923				



Ponderosa Pine Point Counts

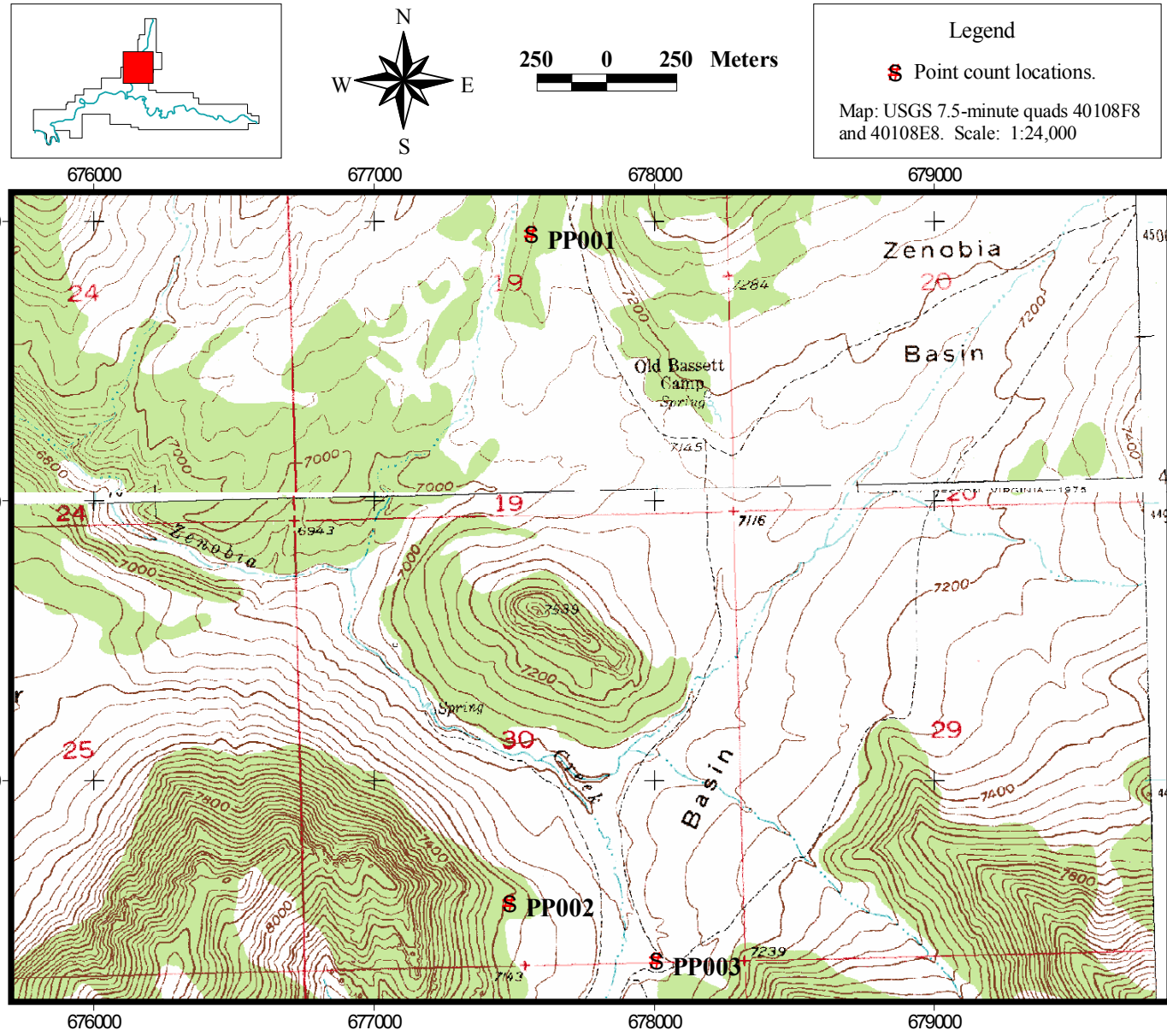


Index to Ponderosa Pine point counts.

Points PP001-PP003.
Access is from Zenobia Basin. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the Monument near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Continue past the boundary, and at the intersection at Limestone Draw, turn north (right). Follow this rough road into Zenobia Basin. Points PP002 and PP003 are near the turn-off to the Old Buffam Place. To reach point PP001 continue north on the dirt road and drive to a gate where the road comes closest to a large red-rock butte (USGS point 7539). Pass the Butte and drive to a burned area at the Old Bassett Camp and spring. From the spring, walk west to access the ponderosa stand. Much of the stand is burned.

UTM locations of PP001-PP003 observation points:

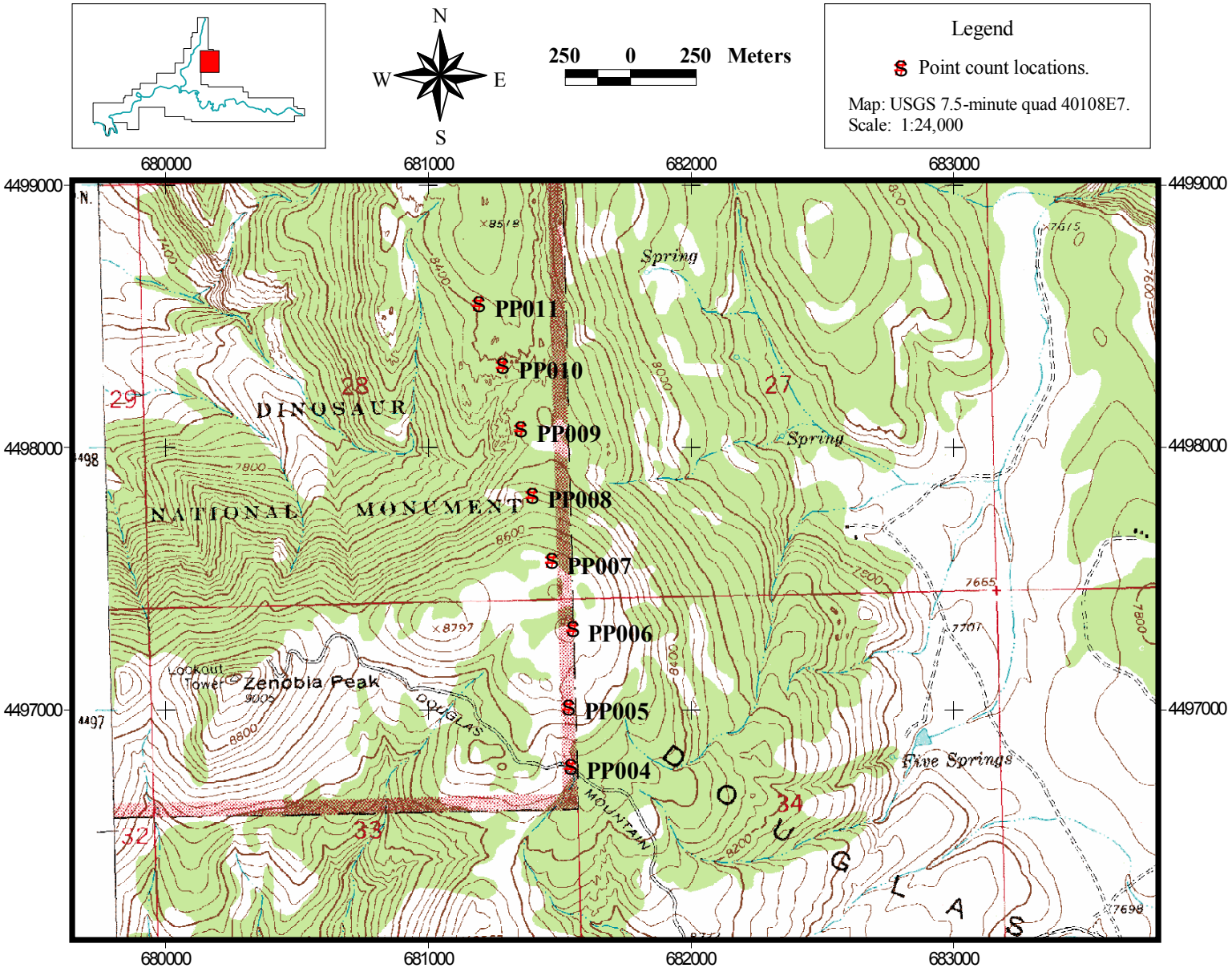
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
PP001	12T	677567	4499954	P003	12T	678014	4497357
PP002	12T	677490	4497564				



Points PP004-PP011.
Access is from the Douglas Mountain Boulevard near Zenobia Peak. Start at the Monument's Boundary just east of Zenobia Peak. Point PP004 is on the road at the boundary. Walk north along the boundary on easy slopes to reach Points PP005-PP007. Continue down a steep slope to a draw to reach point PP008. Climb north out of the draw to reach points PP009-PP011. The points are spaced at 250 meter intervals.

UTM locations of PP004-PP011 observation points:

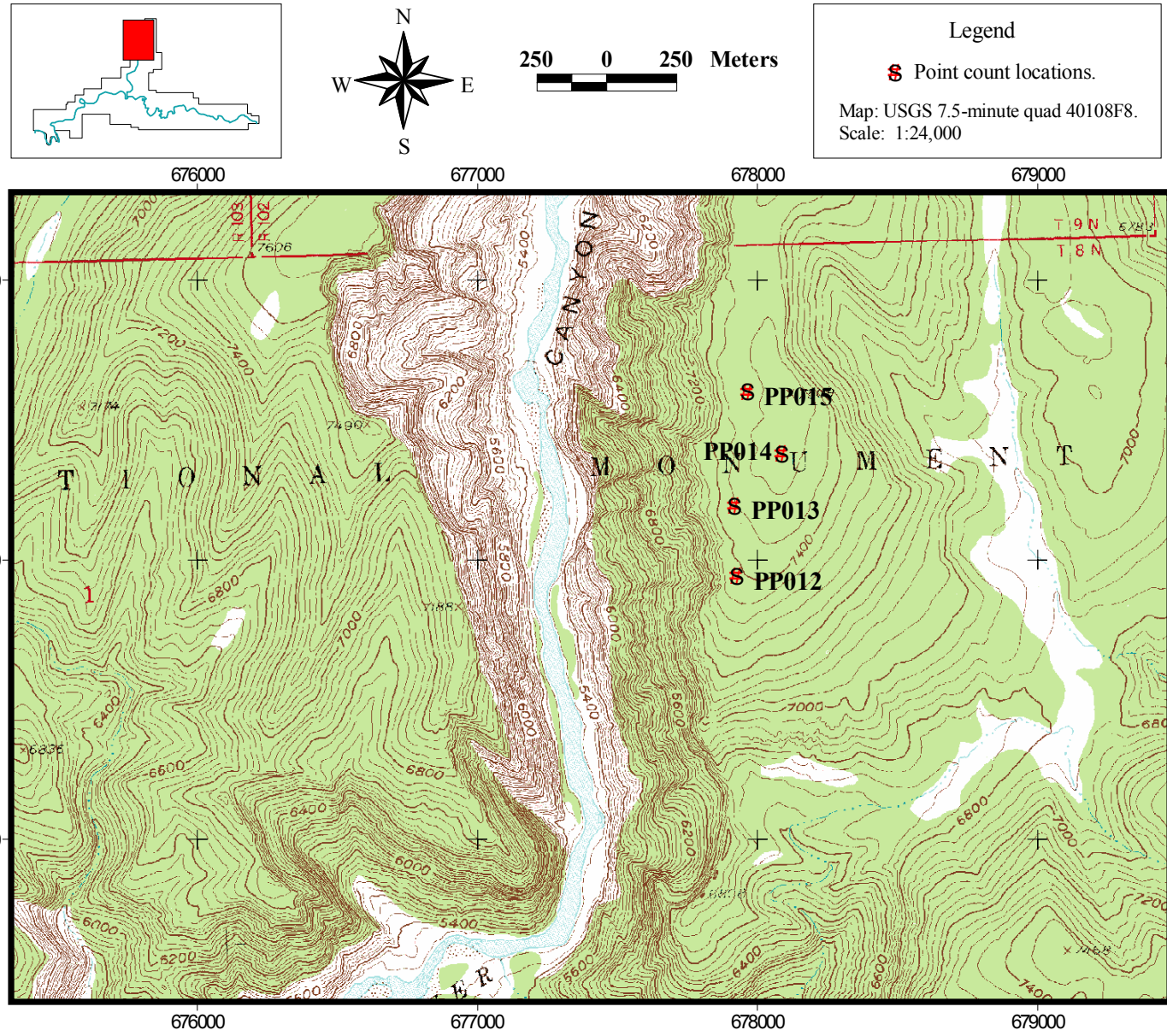
Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
PP004	12T	681550	4496788	PP008	12T	681402	4497820
PP005	12T	681675	4497014	PP009	12T	681359	4498072
PP006	12T	681556	4497313	PP010	12T	681290	4498315
PP007	12T	681476	4497570	PP011	12T	681200	4498549



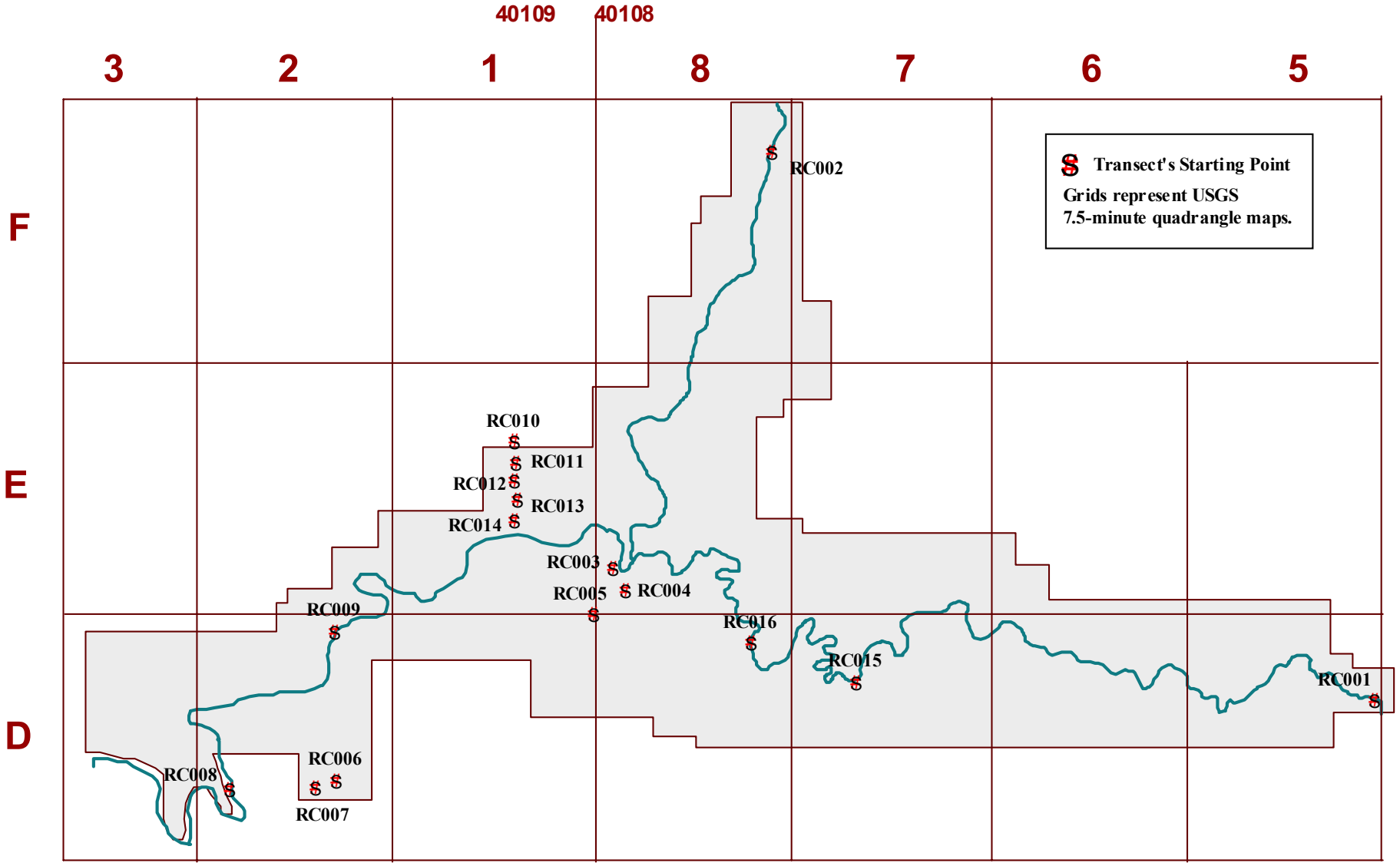
Points PP012-PP015.
Points PP012-PP015 are at the Gates of Lodore. Access is at the end of the road at the Gates of Lodore Campground, at the beginning of the nature trail. From the end of the nature trail, follow a due-south line up the very steep slope on the east side of the Canyon of Lodore. Point PP012 is at the top of the plateau just before it begins to drop down into Jack Springs Draw. Points PP013-PP015 are on the plateau headed north. The points are spaced at 250 meter intervals.

UTM locations of PP012-PP015 observation points:

Point	Zone	Easting	Northing	Point	Zone	Easting	Northing
PP012	12T	677934	4504943	PP014	12T	678093	4505382
PP013	12T	677926	4505196	PP015	12T	677971	4505603

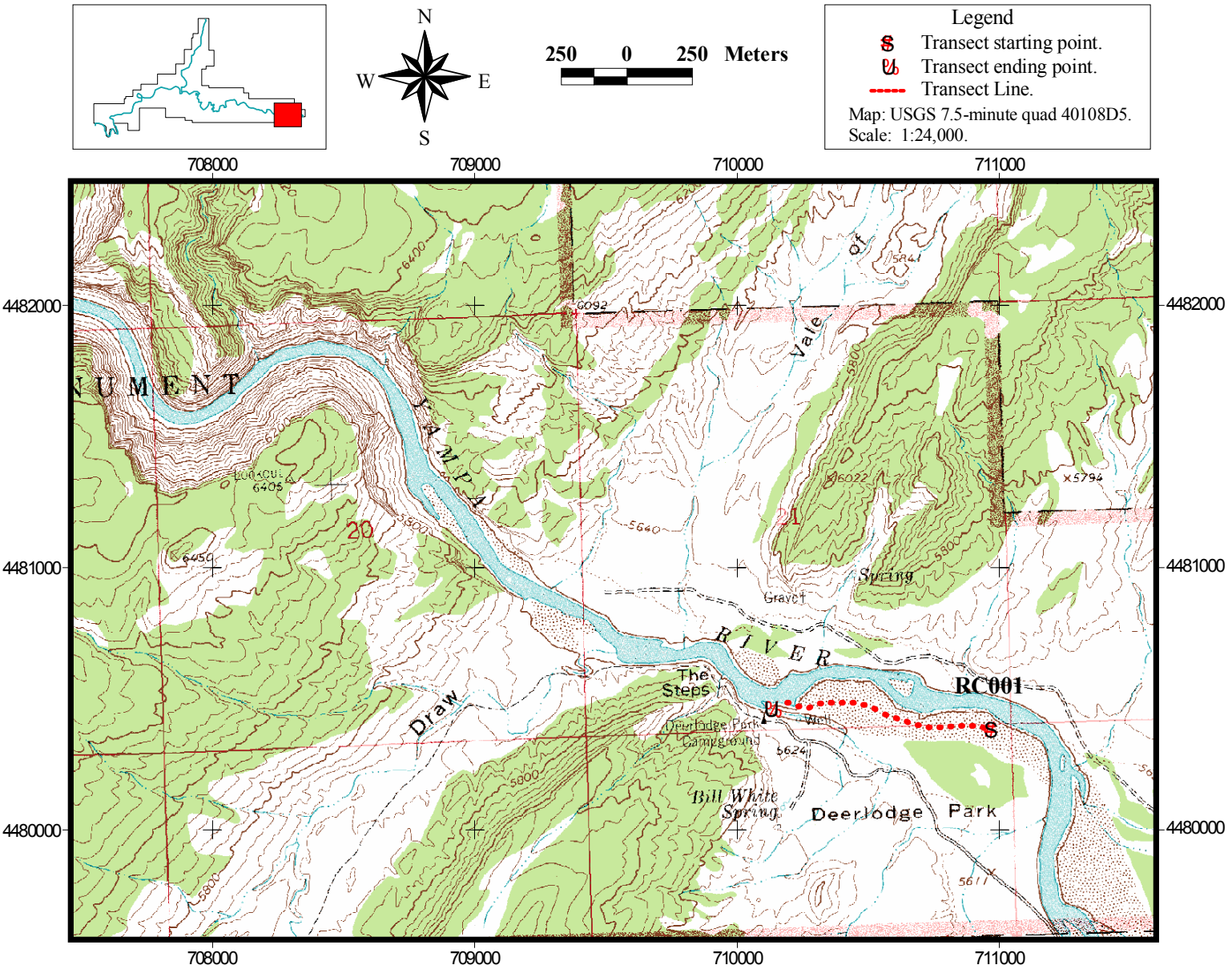


Riparian (Creek) Transects

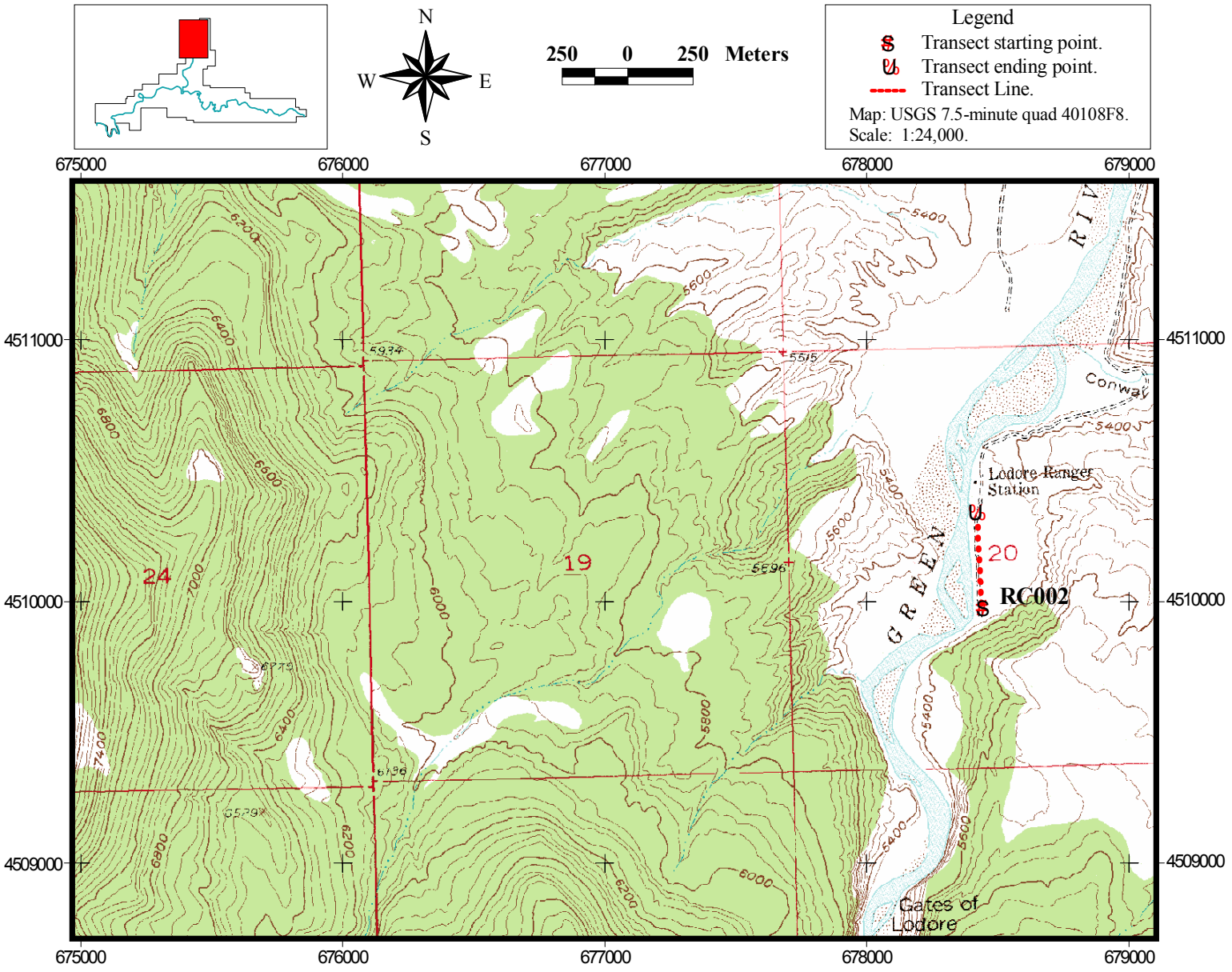


Index to Riparian (Creek) transects.

Transect RC001.
Access is from the Deerlodge Park boat ramp and campground. From the campground, find the transect's starting point at UTM 12T 710975 4480564. The transect follows a line due west through the cottonwood stand for 1000 meters and ends at UTM 12T 710190 4480488.

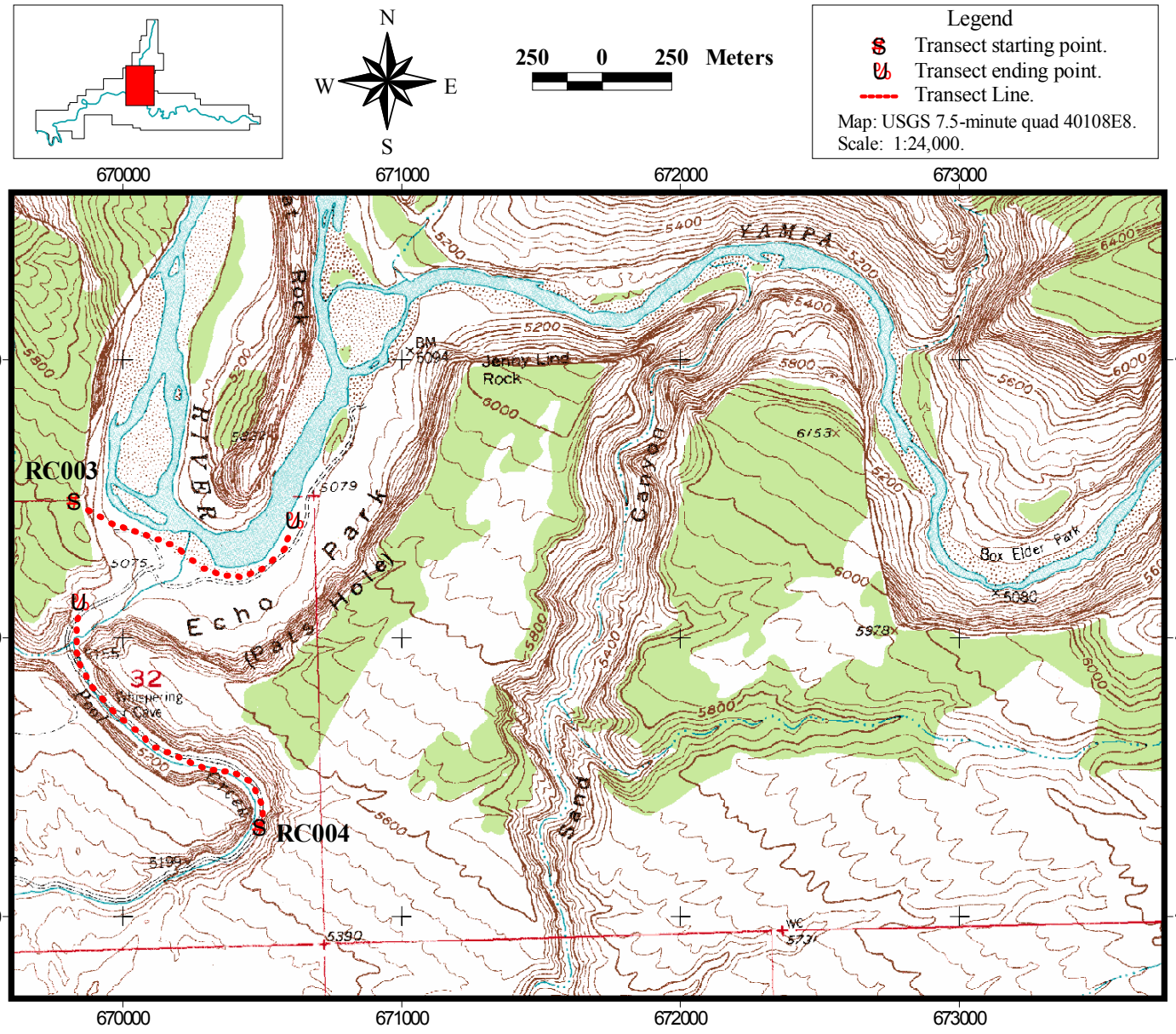


Transect RC002.
Access is from the parking lot at the end of the road at the Gates of Lodore campground. The transect's starting point is on the road at UTM 12T678448 4509978. The transect runs due north for 300 meters toward the Lodore Ranger Station and ends at UTM 12T 678429 4510285.

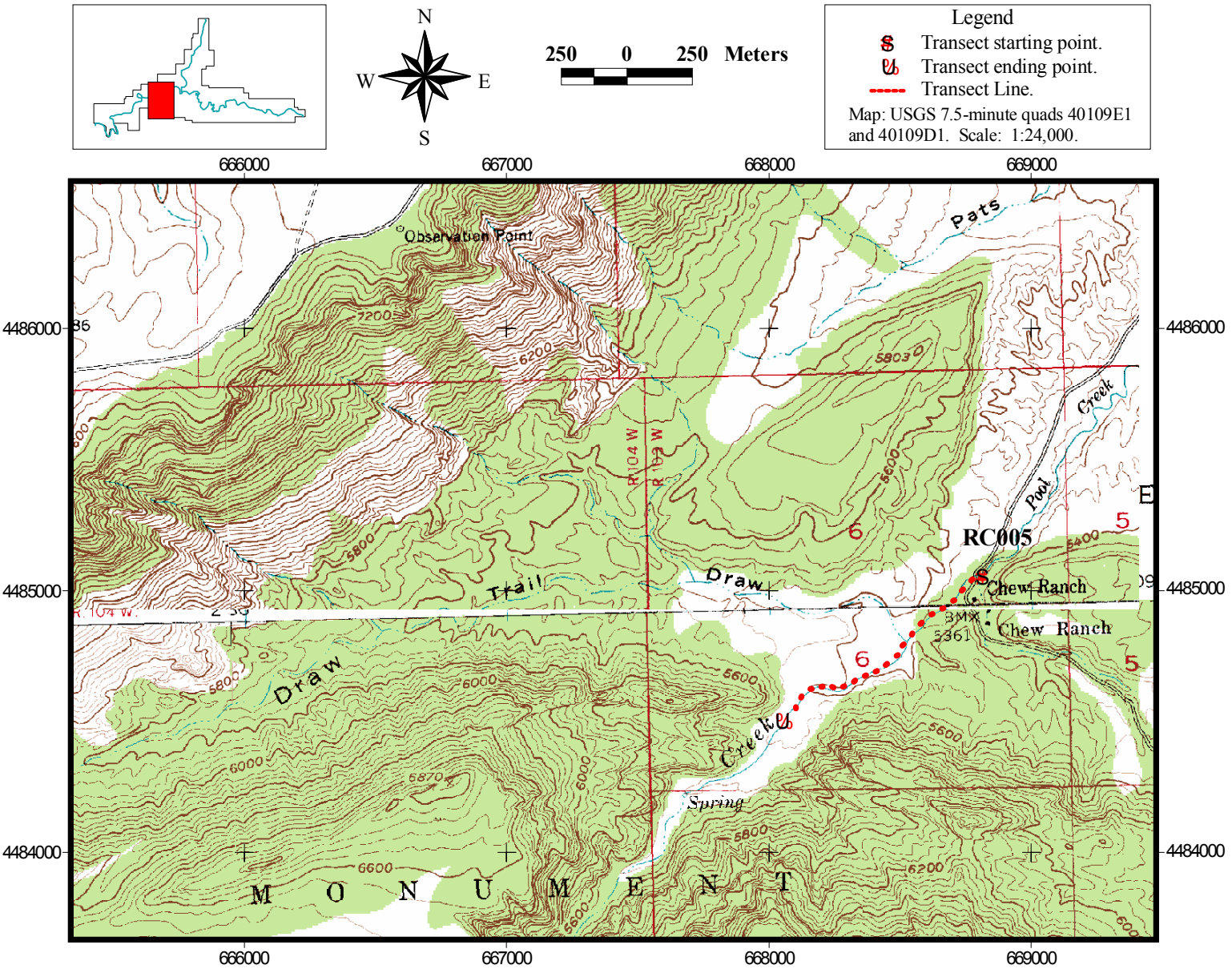


Transect RC003.
Access is from campsite #10 in the Echo Park campground. The transect's starting point is west of campsite #10 near the river at UTM 12T 669875 4487450. The transect runs east along the river. First walk east until you reach the campground loop road. Walk east on the road to the registration station. Continue east through brush to the main campground road. Continue east on the main road to the boat ramp. At the end of the road, continue east on a trail to the end of the riparian habitat at UTM 12T 670610 4487390.

Transect RC004.
Access and starting points are on the Echo Park Road at the Indian Petroglyphs pull-out, at UTM 12T 670496 4486321. The transect runs northwest along Pool Creek for 1000 meters, and ends at UTM 12T 669842 4487076.

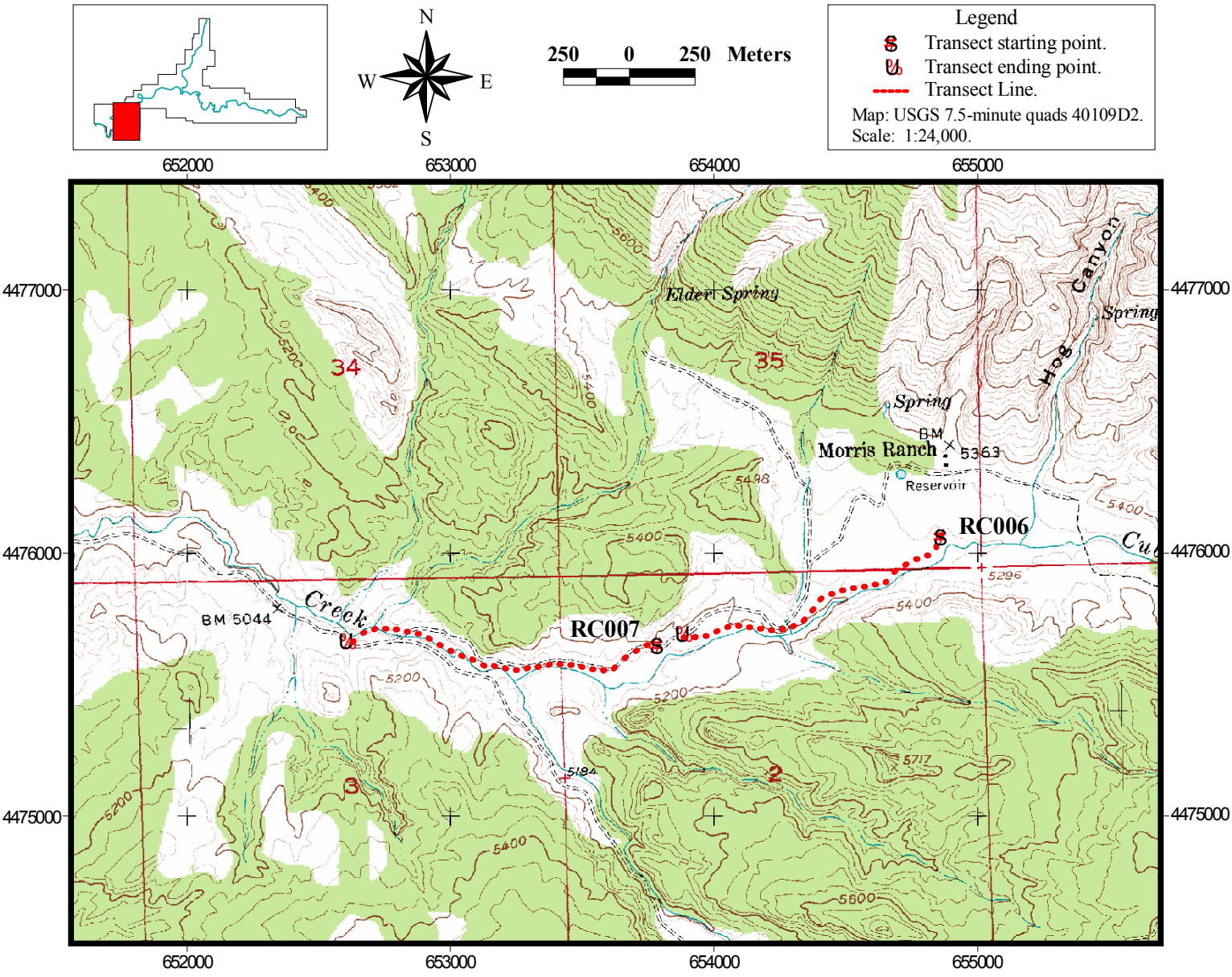


Transect RC005.
Access is from the Echo Park Road at the Chew Ranch Historical Site. The transect's starting point is where the Echo Park Road crosses Pool Creek at UTM 12T 668819 4485053. The transect runs southwest along Pool Creek for 1000 meters and ends at UTM 12T 668100 4484542.

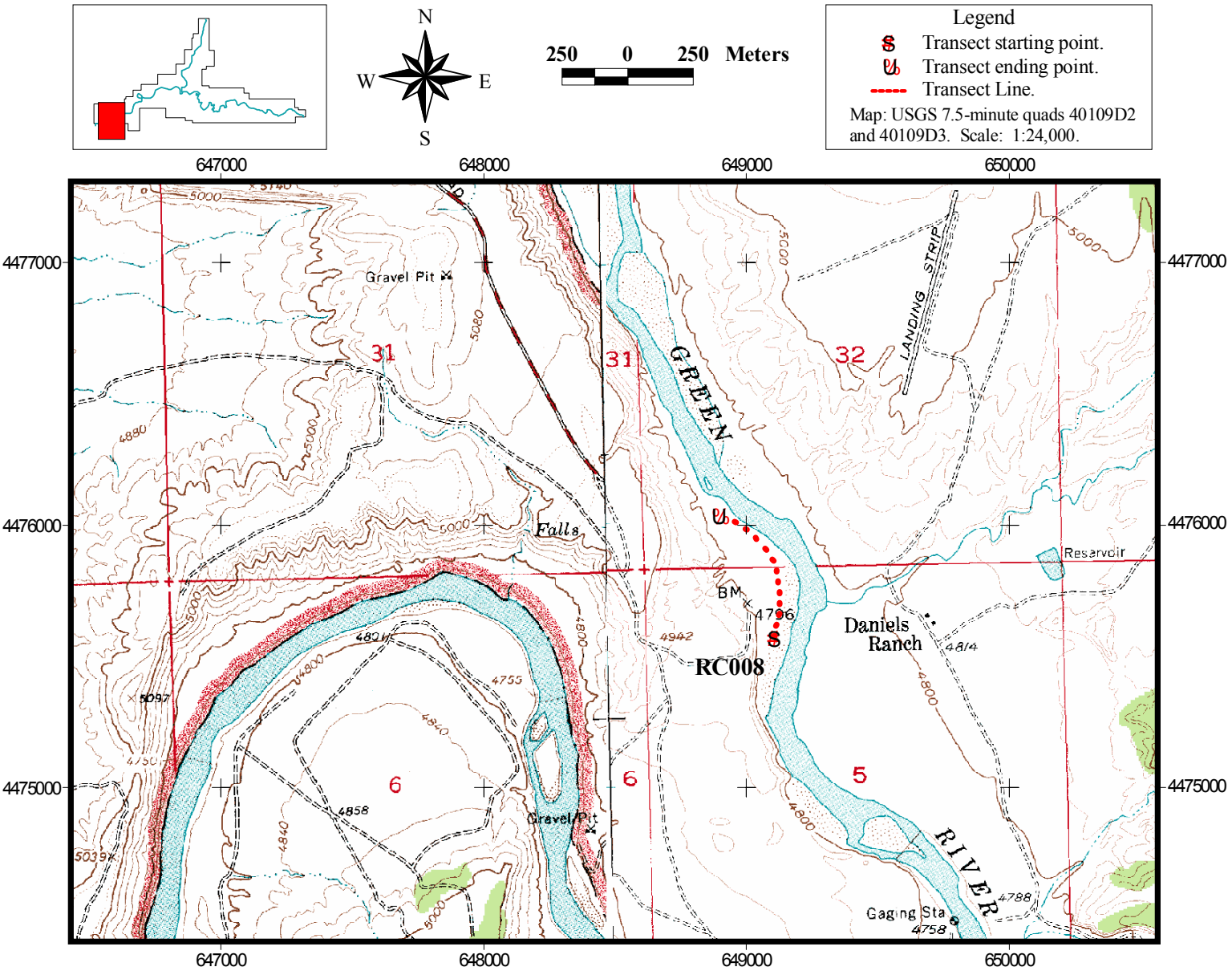


Transect RC006.
Access is from the Cub Creek Road at the Josie Cabin Historical Site. From the cabin, walk due south to Cub Creek to reach the transect's starting point at UTM 12T 654866 4476062. The transect follows Cub Creek west for 1000 meters and ends at UTM 12T 653853 4475663.

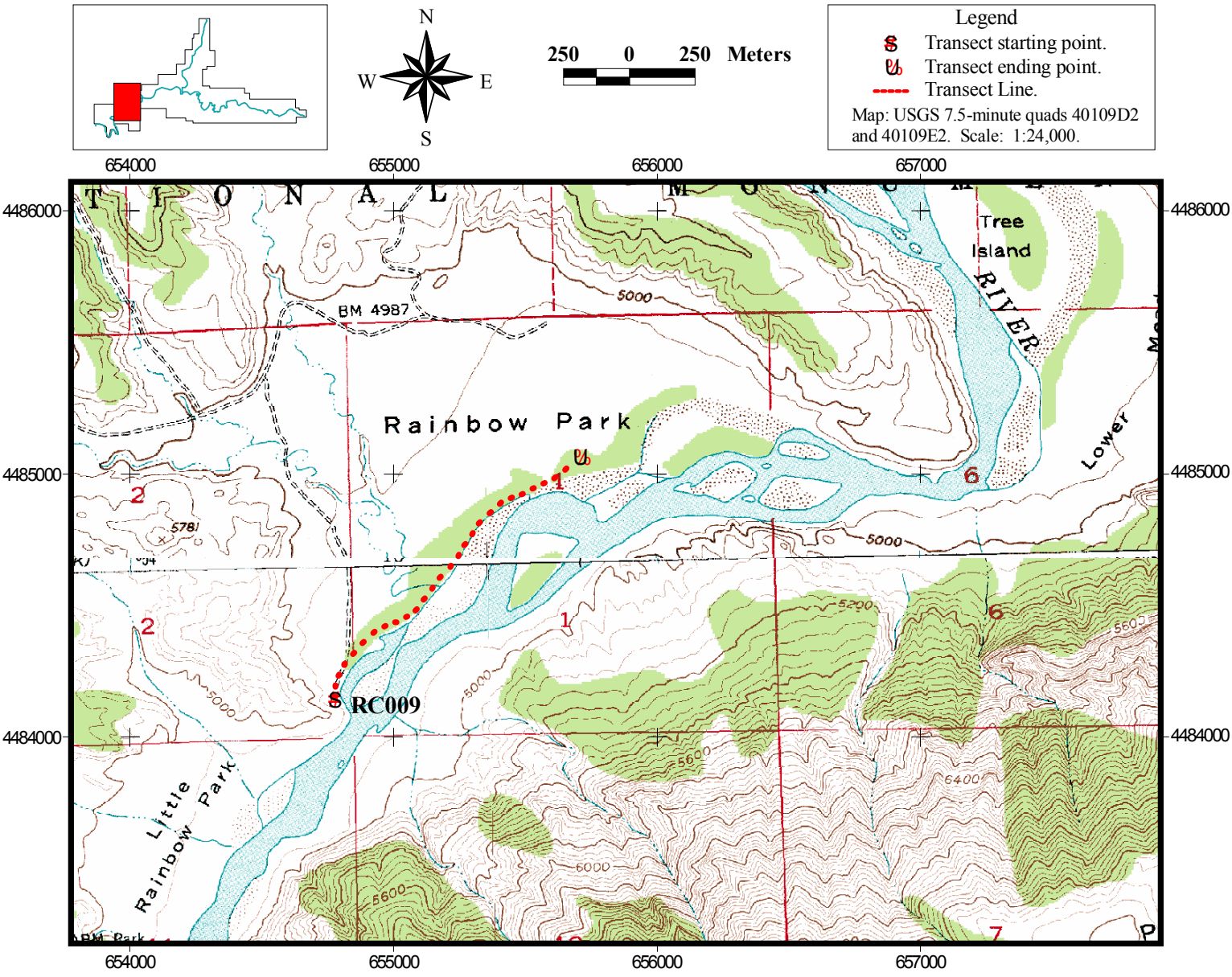
Transect RC007.
Access is from the Cub Creek Road at the end of Transect RW006 (above), 1000 meters west of the Josie Cabin. The transect's starting point is at UTM 12T 653853 4475663. The transect runs east along Cub Creek for 1000meters and ends at UTM 12T 652632 4475654.



Transect RC008.
Access is at the Green River Campground. The transect starts at campsite # 87, at UTM 648951 4476004. The transect runs north along the road toward the Ranger Station for 500 meters and ends at UTM 649113 4475568.

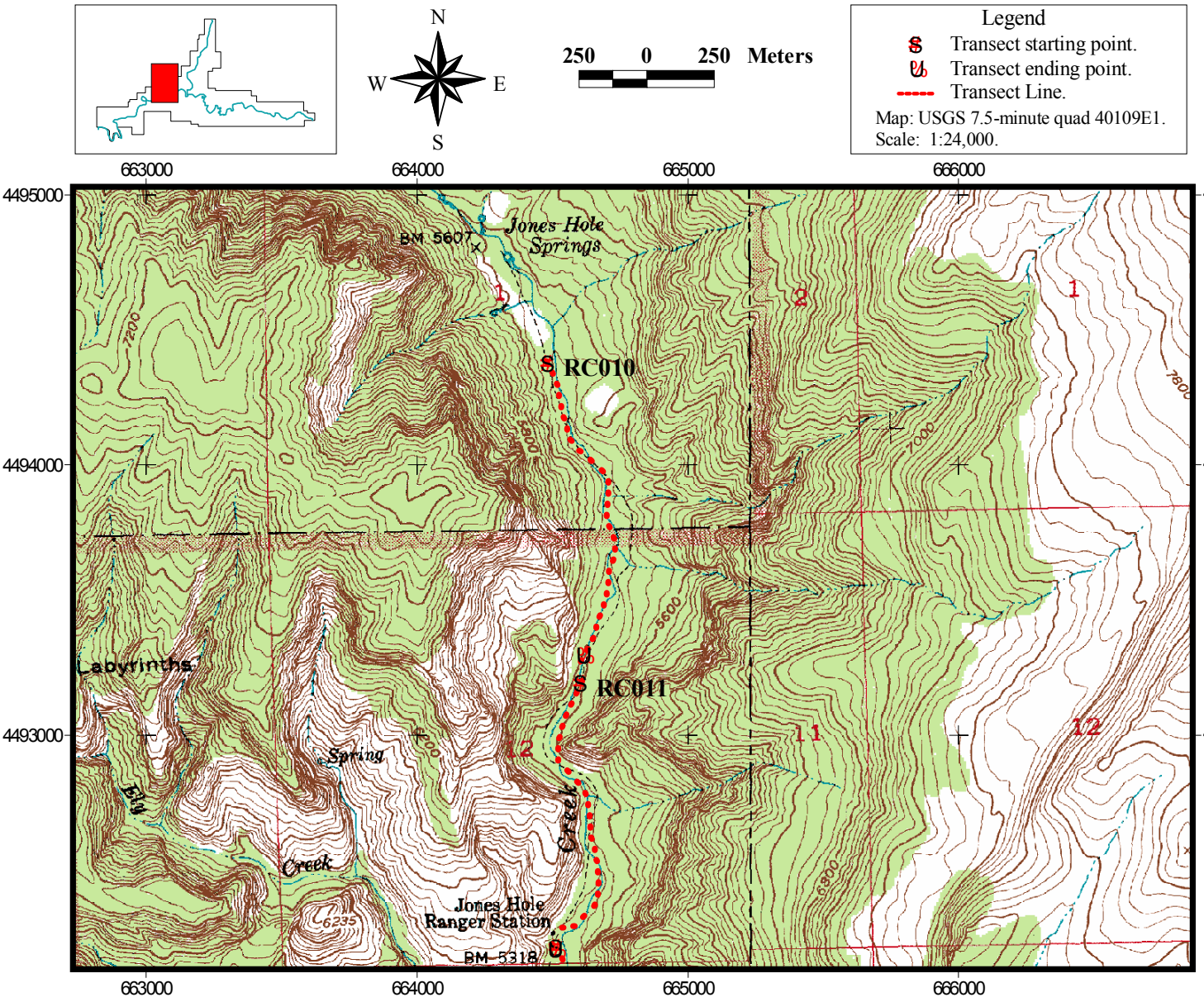


Transect RC009.
Access is from Rainbow Park. The transect's starting point is at the Rainbow Park Campground at UTM 12T 654786 4484144. The transect runs northwest along the Green River for 1000 meters and ends at UTM 12T 655661 4485013.



Transect RC010.
Access is from the Jones Hole Fish Hatchery. The transect's starting point is at interpretive signs on the trail just past the last fish pond, at UTM 12T 664489 4494379. The transect runs south along Jones Creek for 1000 meters and ends at UTM 12T 664604 4493264.

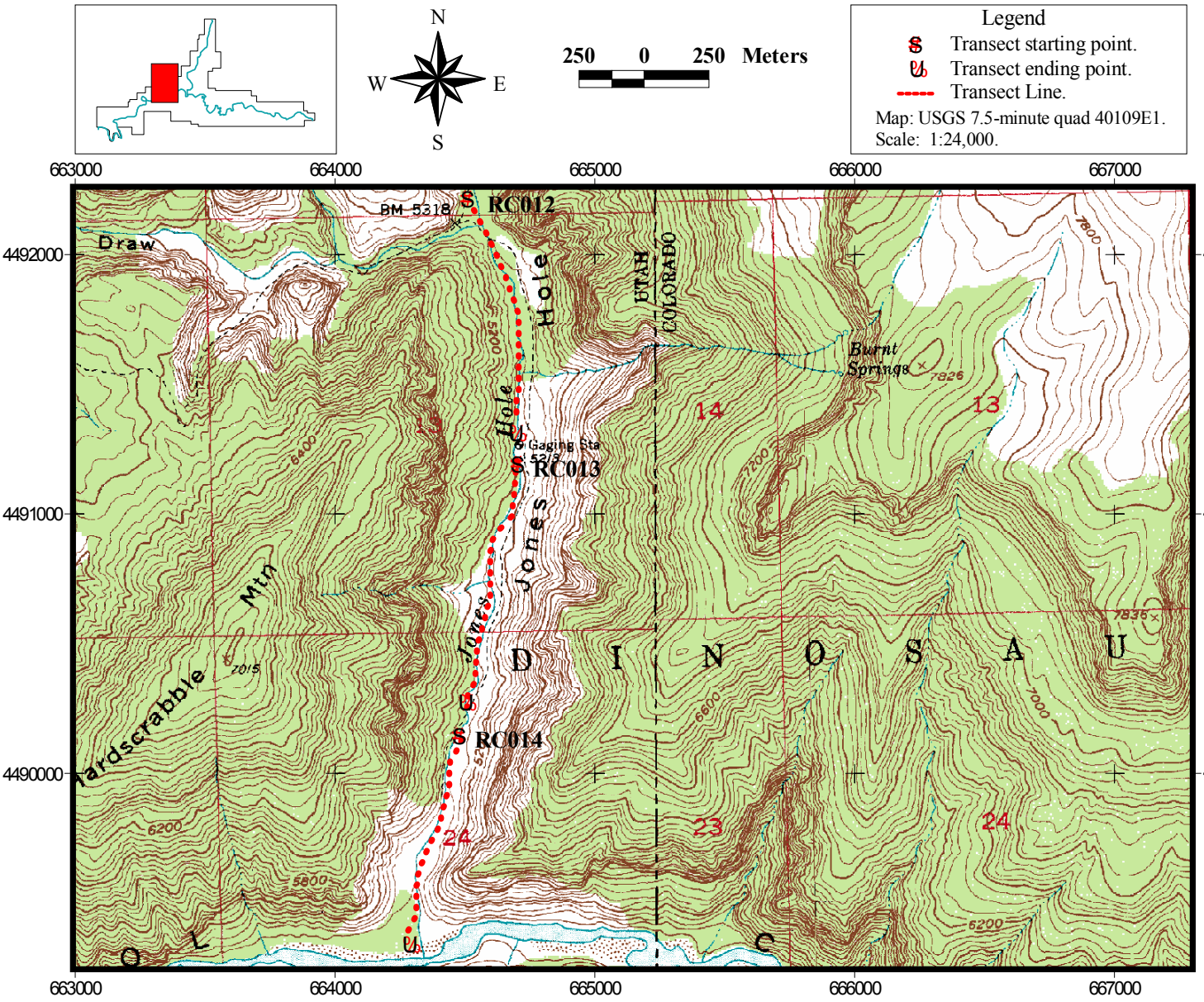
Transect RC011.
Access is from the Jones Hole Fish Hatchery. The transect's starting point is at UTM 12T 664604 4493264, 1000 meters south of the start of the Jones Creek Trail. The transect runs south along Jones Creek for 1000 meters and ends at UTM 12T 664518 4492279.



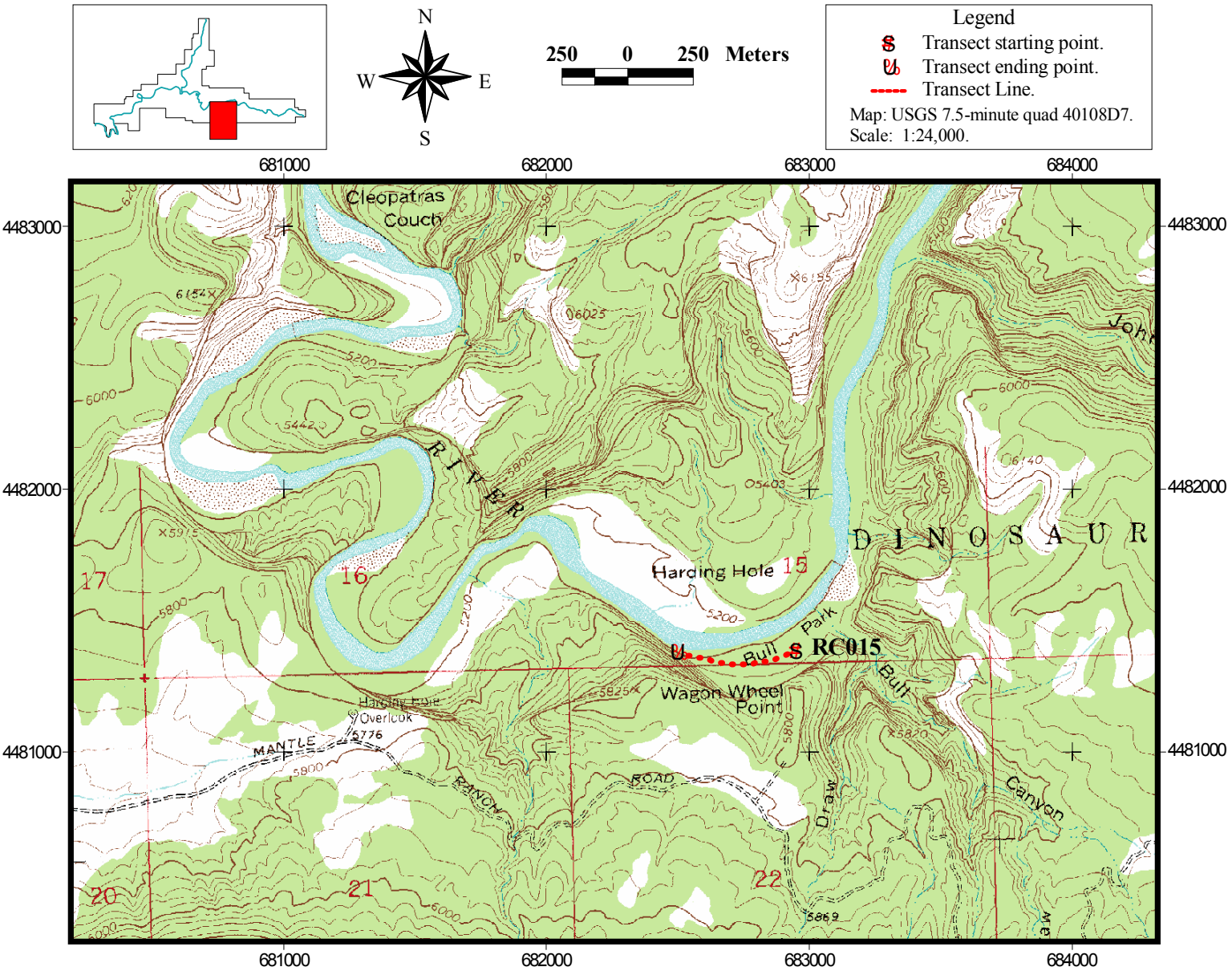
Transect RC012.
Access is from the Jones Hole Fish Hatchery. The transect's starting point is at UTM 12T 664518 4492279, 2 kilometers south of the start of the Jones Creek Trail. The transect runs south along Jones Creek for 1000 meters and ends at UTM 12T 664690 4491266.

Transect RC013.
Access is from the Jones Hole Fish Hatchery. The transect's starting point at UTM 12T 664690 4491266, 3 kilometers south of the start of the Jones Creek Trail. The transect runs south along Jones Creek for 1000 meters and ends at UTM 12T 664504 4490225.

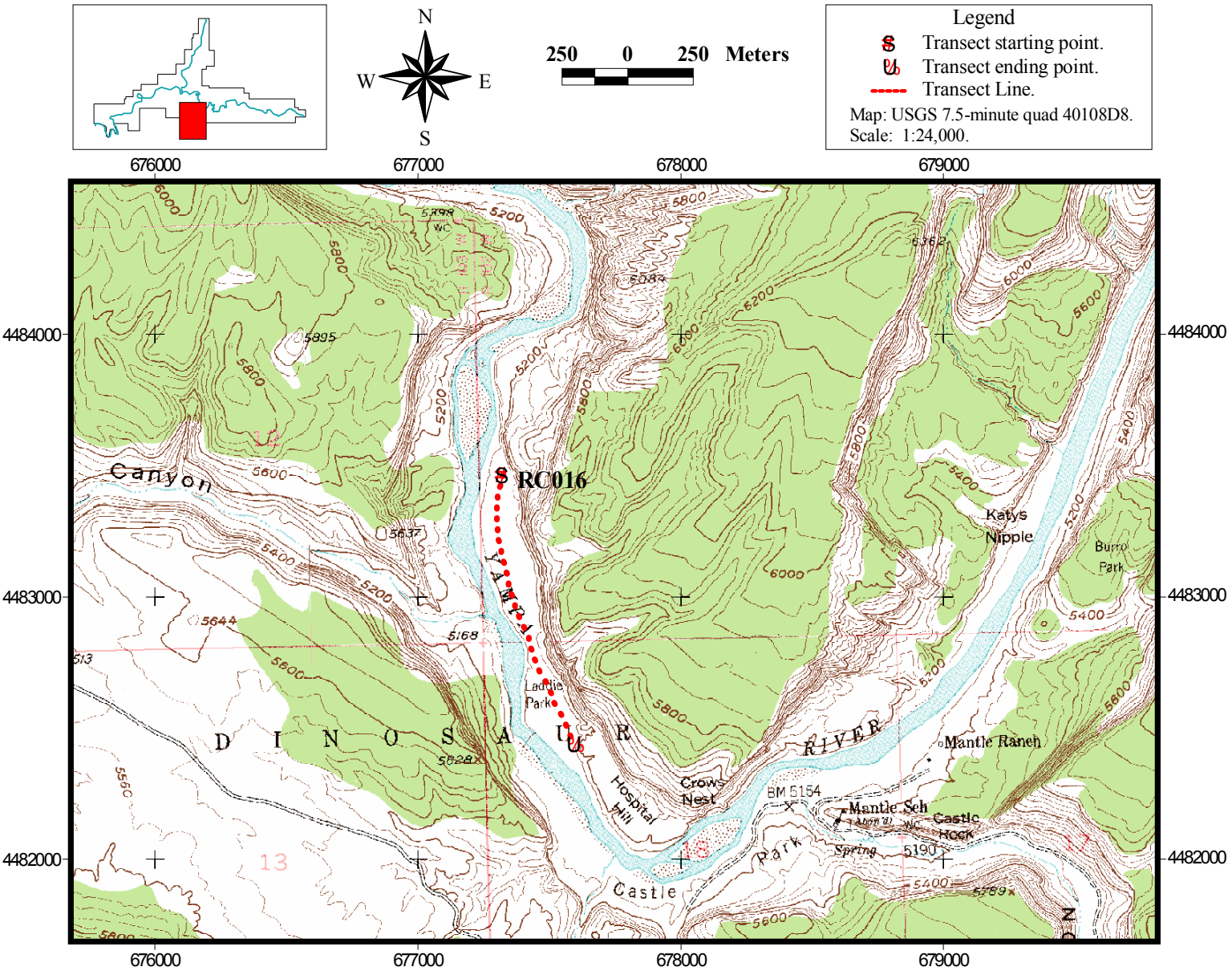
Transect RC014.
Access is from the Jones Hole Fish Hatchery. The transect's starting point at UTM 12T 664504 4490225, 4 kilometers south of the start of the Jones Creek Trail. The transect runs south along Jones Creek for 1000 meters and ends at UTM 12T 664287 4489351.



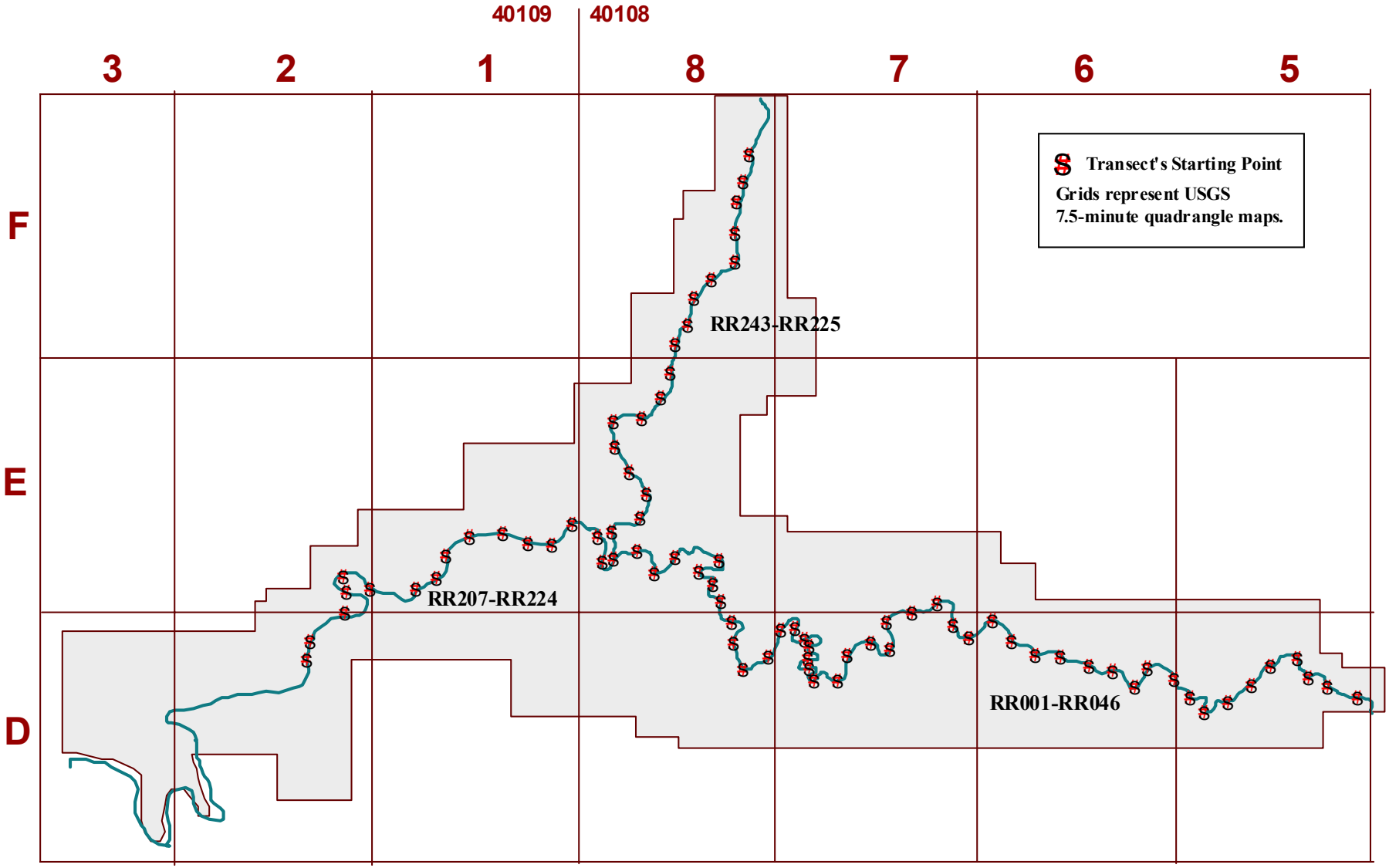
Transect RC015.
Access is from the Yampa River at the Harding Hole River Campground. The access point may be reached either by raft or the Bull Canyon trail. The transect's starting point is near the canyon wall at UTM 12T 682957 4481388. The transect contours west along the canyon wall for 300 meters and ends at UTM 12T 682542 4481350.



Transect RC016.
Access is from the Yampa River at the Laddie Park River Campground. The access point is reached by raft. The transect's starting point is the canyon wall at UTM 12T 677326 4483465. The transect contours south along the canyon wall for 1000 meters and ends at UTM 677579 4482433.



Riparian (River) Transects

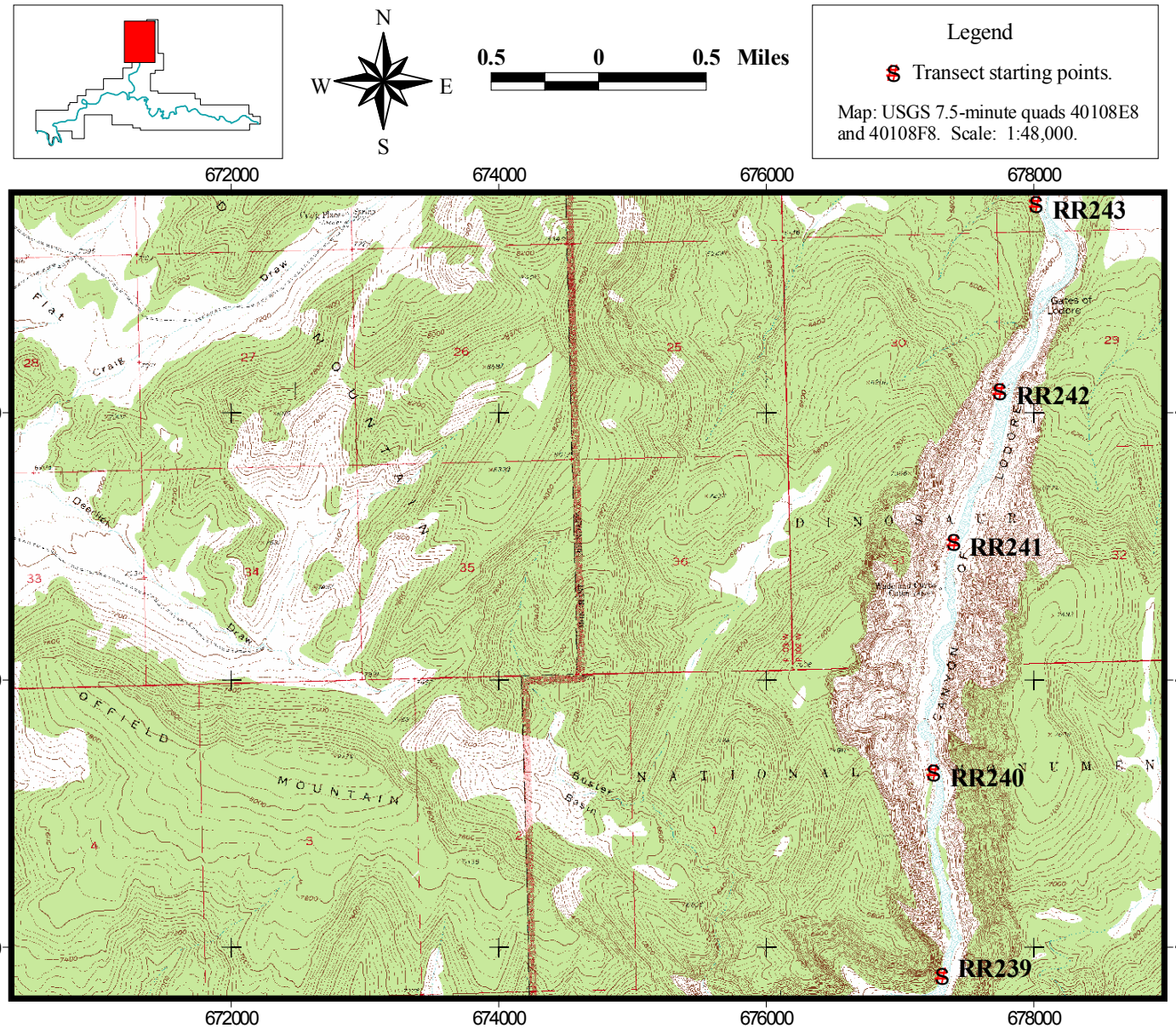


Index to Riparian (River) transects.

Transects RR243-RR239 (Green River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR243-RR239 starting points:

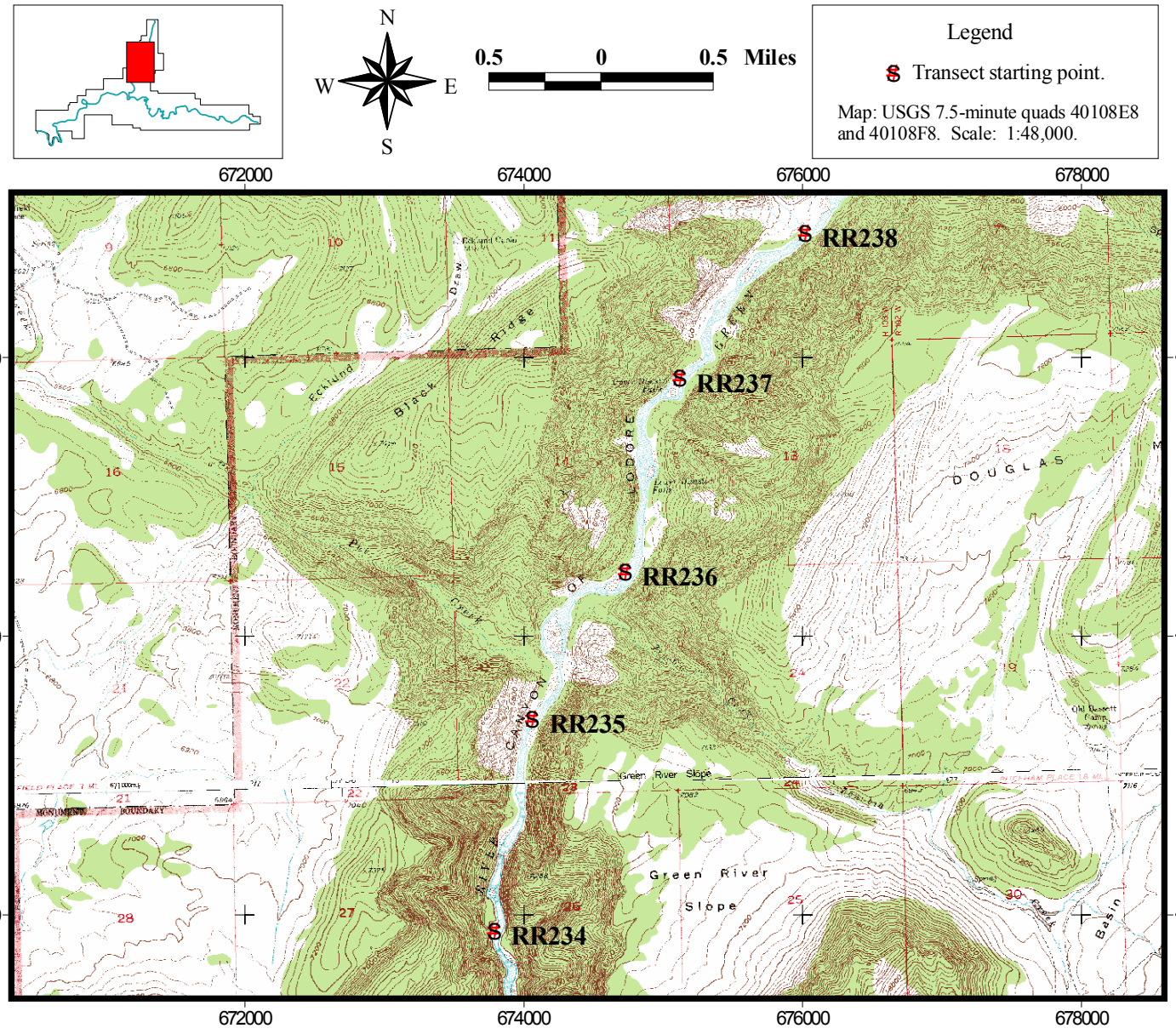
Transect	Zone	Easting	Northing	Transect	Zone	Ea4sting	Northing
RR243	12T	678029	4509562	RR240	12T	677264	4505314
RR242	12T	677758	4508169	RR239	12T	677325	4503791
RR241	12T	677410	4507035				



Transects RR238-RR234 (Green River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR238-RR234 starting points:

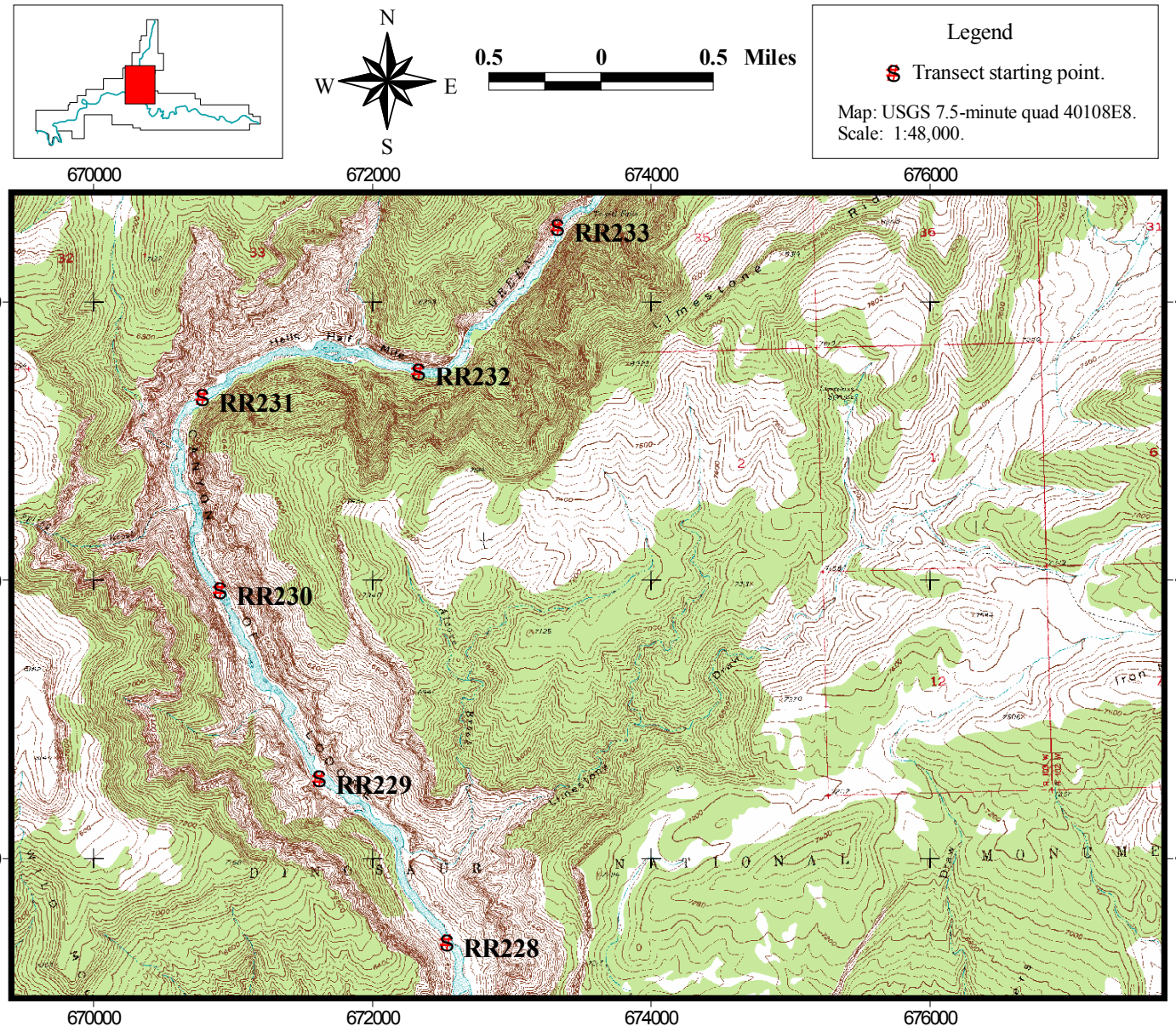
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR238	12T	676033	4502900	RR235	12T	674076	4499409
RR237	12T	675133	4501859	RR234	12T	673801	4497886
RR236	12T	674741	4500470				



Transects RR233-RR228 (Green River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR233-RR228 starting points:

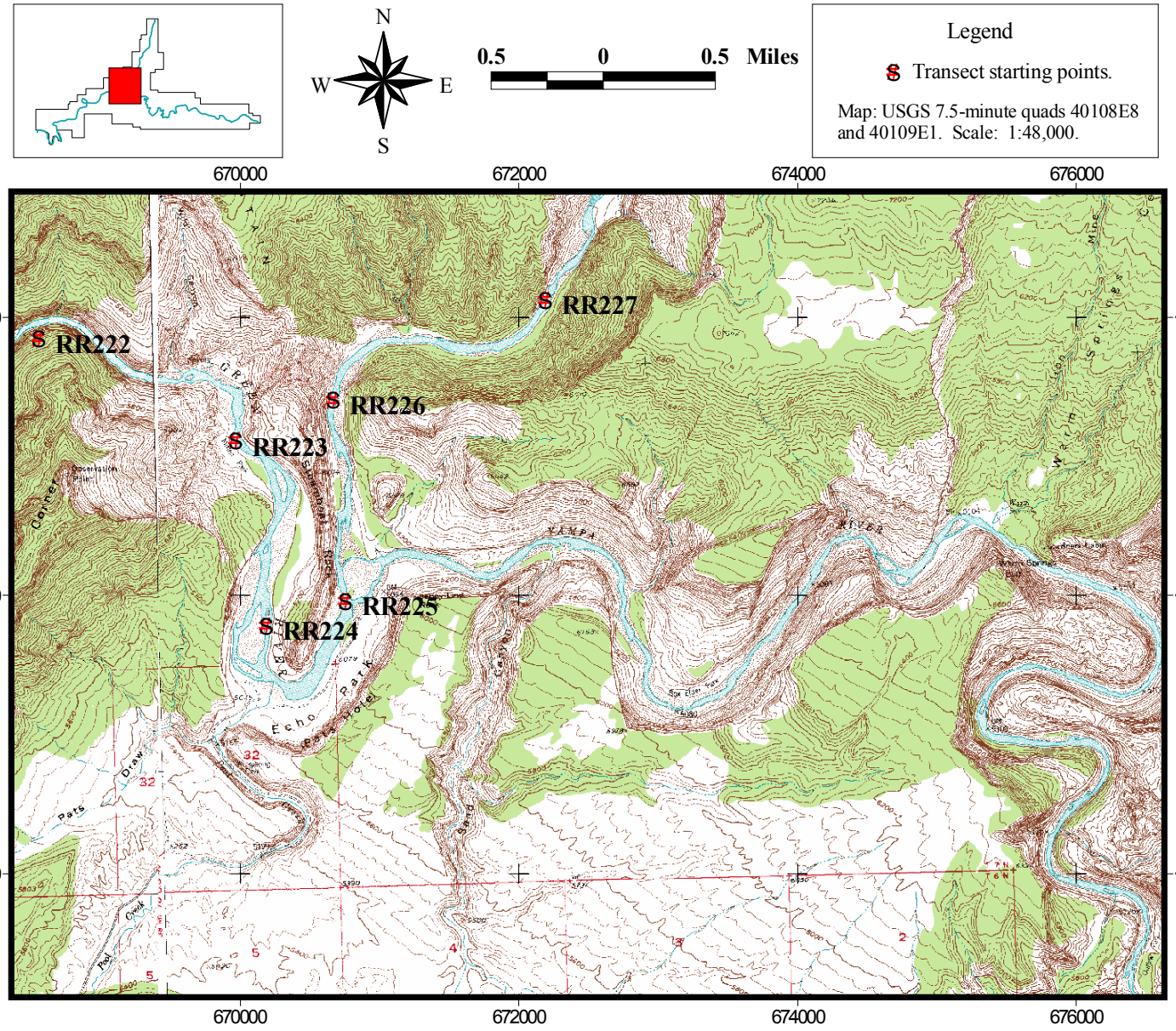
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR233	12T	673339	4496541	RR230	12T	670921	4493929
RR232	12T	672343	4495501	RR229	12T	671630	4492576
RR231	12T	670792	4495318	RR228	12T	672545	4491398



Transects RR227-RR222 (Green River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR227-RR222 starting points:

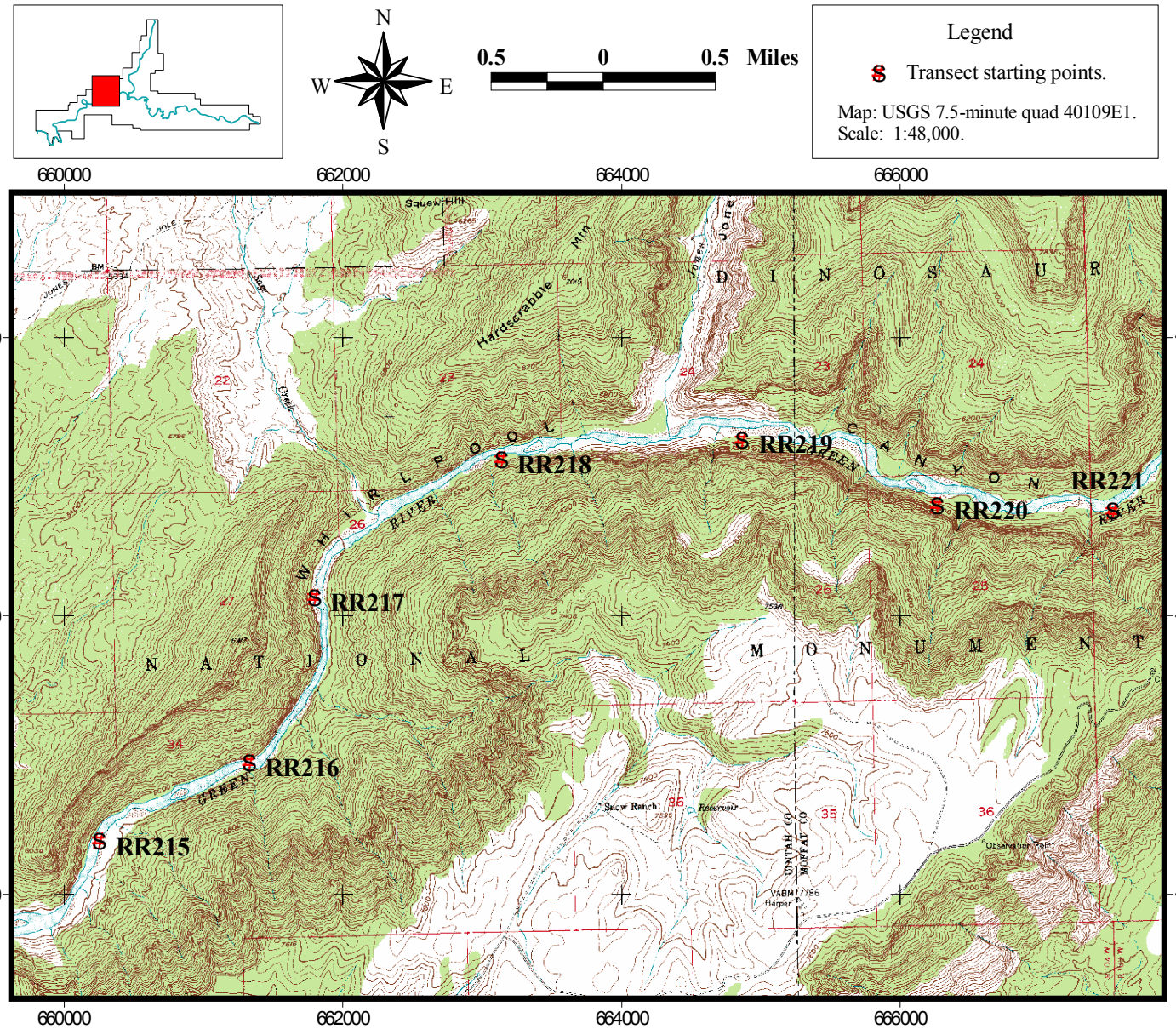
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR227	12T	672205	4490126	RR224	12T	670200	4487787
RR226	12T	670679	4489406	RR223	12T	669979	4489113
RR225	12T	670767	4487963	RR222	12T	668567	4489848



Transects RR221-RR215 (Green River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR221-RR215starting points:

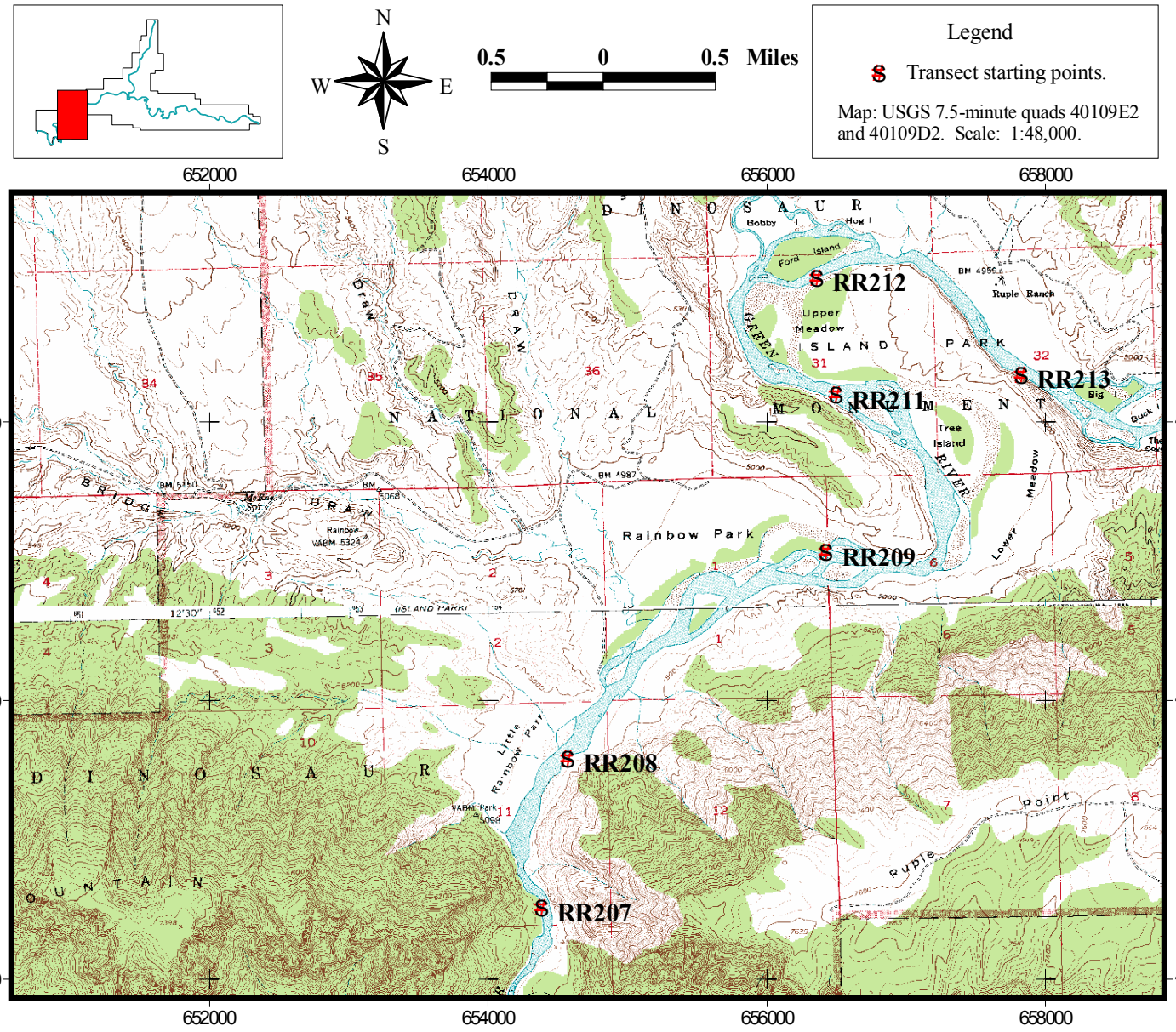
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR221	12T	667537	4488756	RR217	12T	661811	4488138
RR220	12T	666281	4488798	RR216	12T	661379	4486861
RR219	12T	664880	4489271	RR215	12T	660369	4486346
RR218	12T	663150	4489127		12T		



Transects RR213-RR207 (Green River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR213-RR207 starting points:

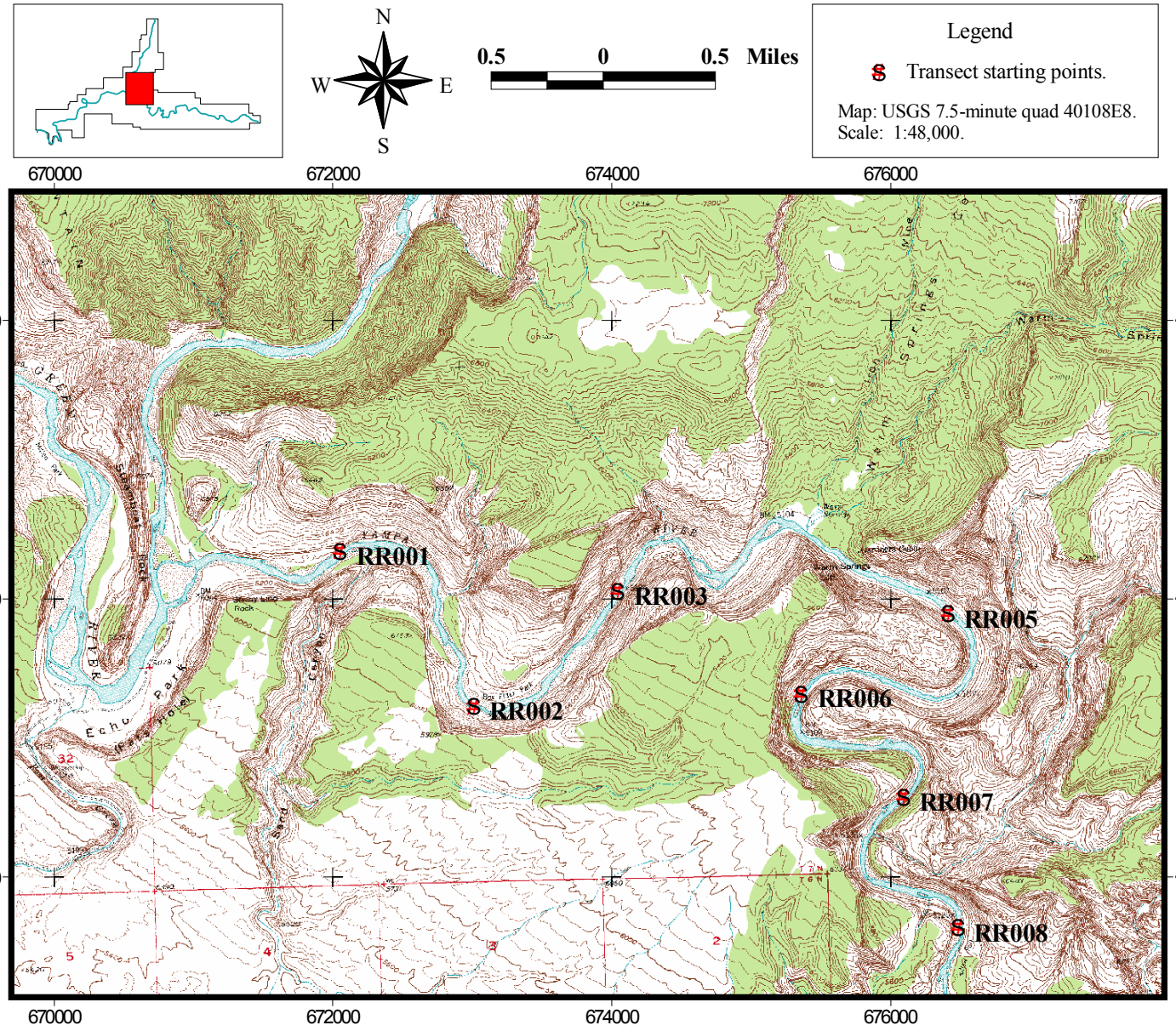
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR213	12T	657836	4486346	RR209	12T	656435	4485069
RR212	12T	656394	4486964	RR208	12T	654581	4483586
RR211	12T	656620	4486058	RR207	12T	654396	4482515



Transects RR001-RR008 (Yampa River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR001-RR008 starting points:

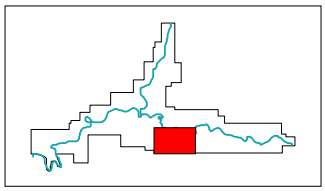
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR001	12T	672067	4488344	RR006	12T	675375	4487322
RR002	12T	673024	4487232	RR007	12T	676106	4486580
RR003	12T	674057	4488059	RR008	12T	676497	4485643
RR005	12T	676427	4487898				



Transects RR009-RR022.
All river transects are one river-mile in length. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR009-RR022 starting points:

Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR009	12T	677169	4484606	RR016	12T	681303	4483348
RR010	12T	677214	4483493	RR017	12T	681163	4482621
RR011	12T	677695	4482090	RR018	12T	681243	4482110
RR012	12T	679083	4482747	RR019	12T	681539	4481454
RR013	12T	679730	4484135	RR020	12T	682827	4481454
RR014	12T	680494	4484280	RR021	12T	683273	4482832
RR015	12T	680988	4483659	RR022	12T	684596	4483518



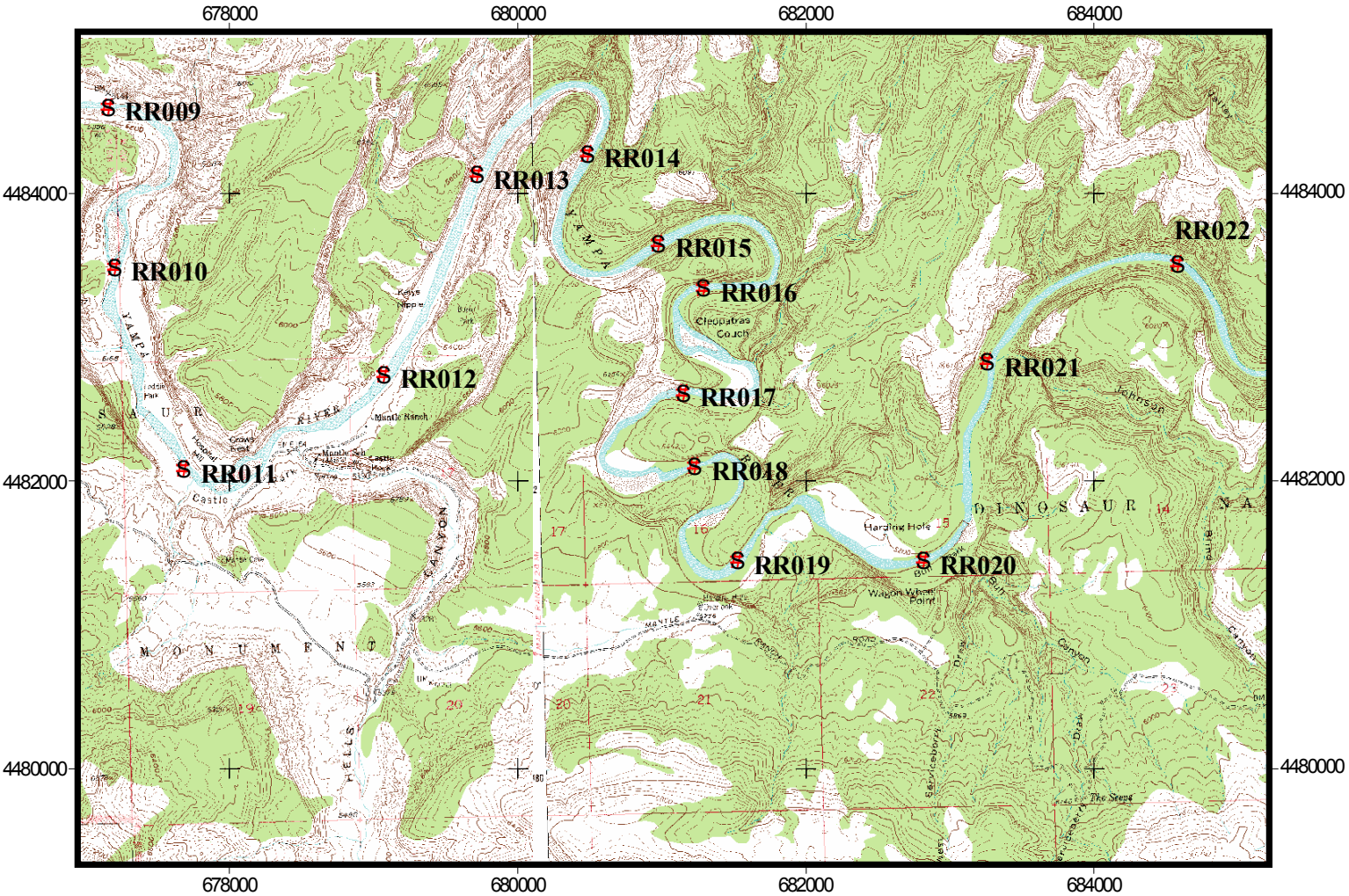
N
W E
S

0.5 0 0.5 Miles

Legend

S Transect starting points.

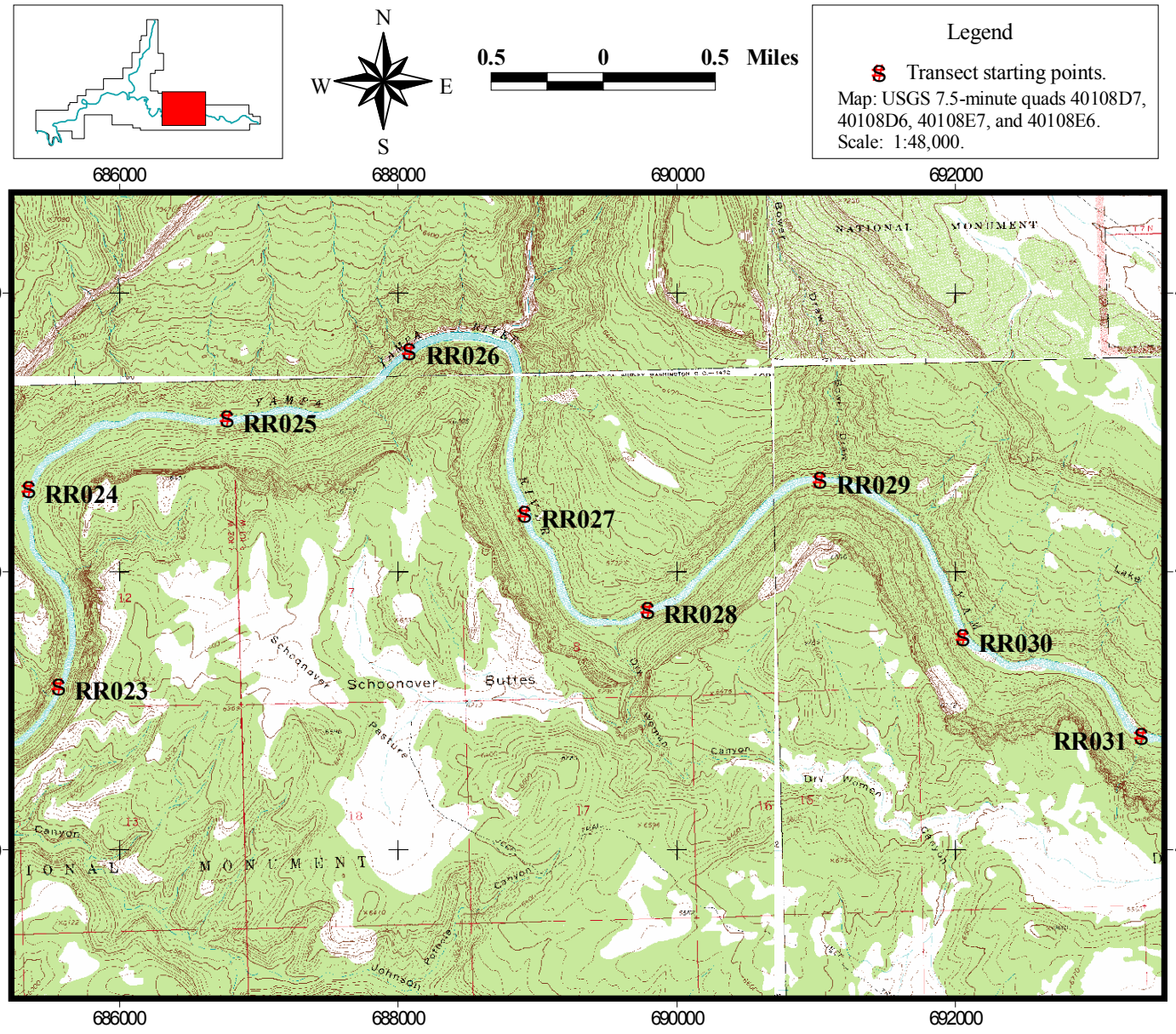
Map: USGS 7.5-minute quads 40108D7 and 40108D8. Scale: 1:48,000.



Transects RR023-RR031 (Yampa River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR023-RR031 starting points:

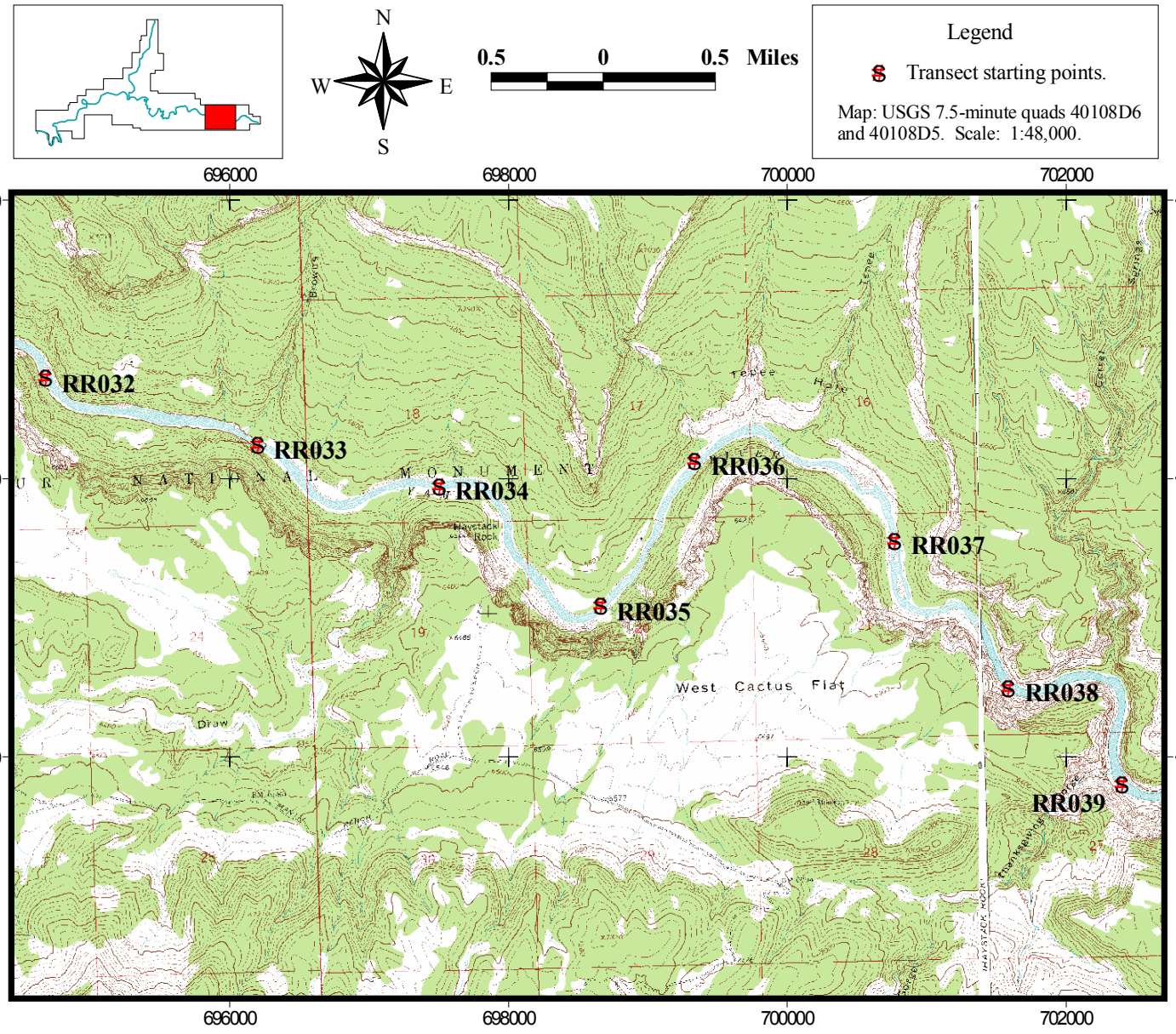
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR023	12T	685578	4483178	RR028	12T	689803	4483729
RR024	12T	685362	4484596	RR029	12T	691040	4484661
RR025	12T	686786	4485102	RR030	12T	692063	4483528
RR026	12T	688094	4485588	RR031	12T	693346	4482822
RR027	12T	688921	4484420				



Transects RR032-RR039 (Yampa River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR032-RR039 starting points:

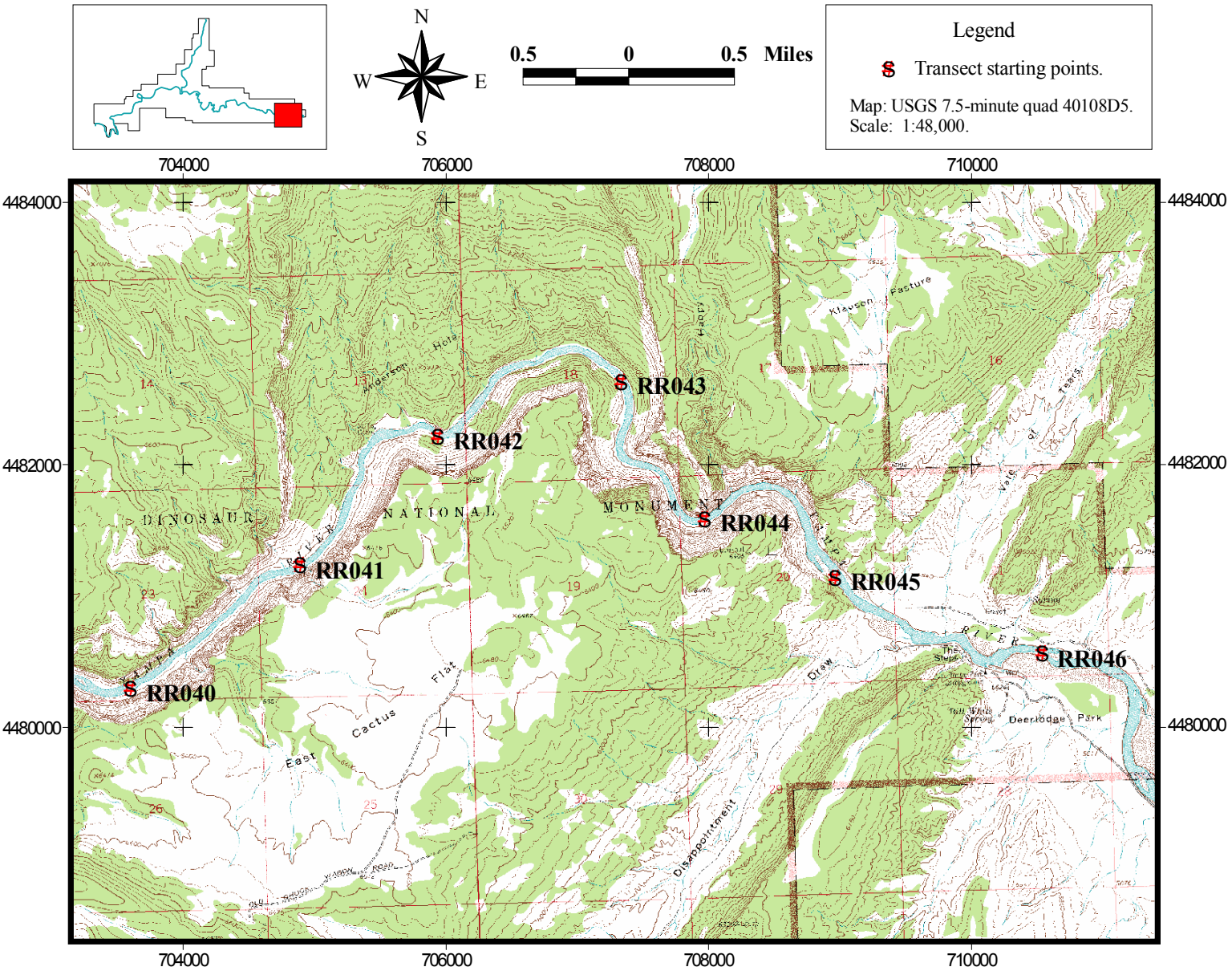
Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR032	12T	694689	4482726	RR036	12T	699349	4482130
RR033	12T	696212	4482245	RR037	12T	700783	4481559
RR034	12T	697515	4481950	RR038	12T	701599	4480501
RR035	12T	698673	4481088	RR039	12T	702411	4479810



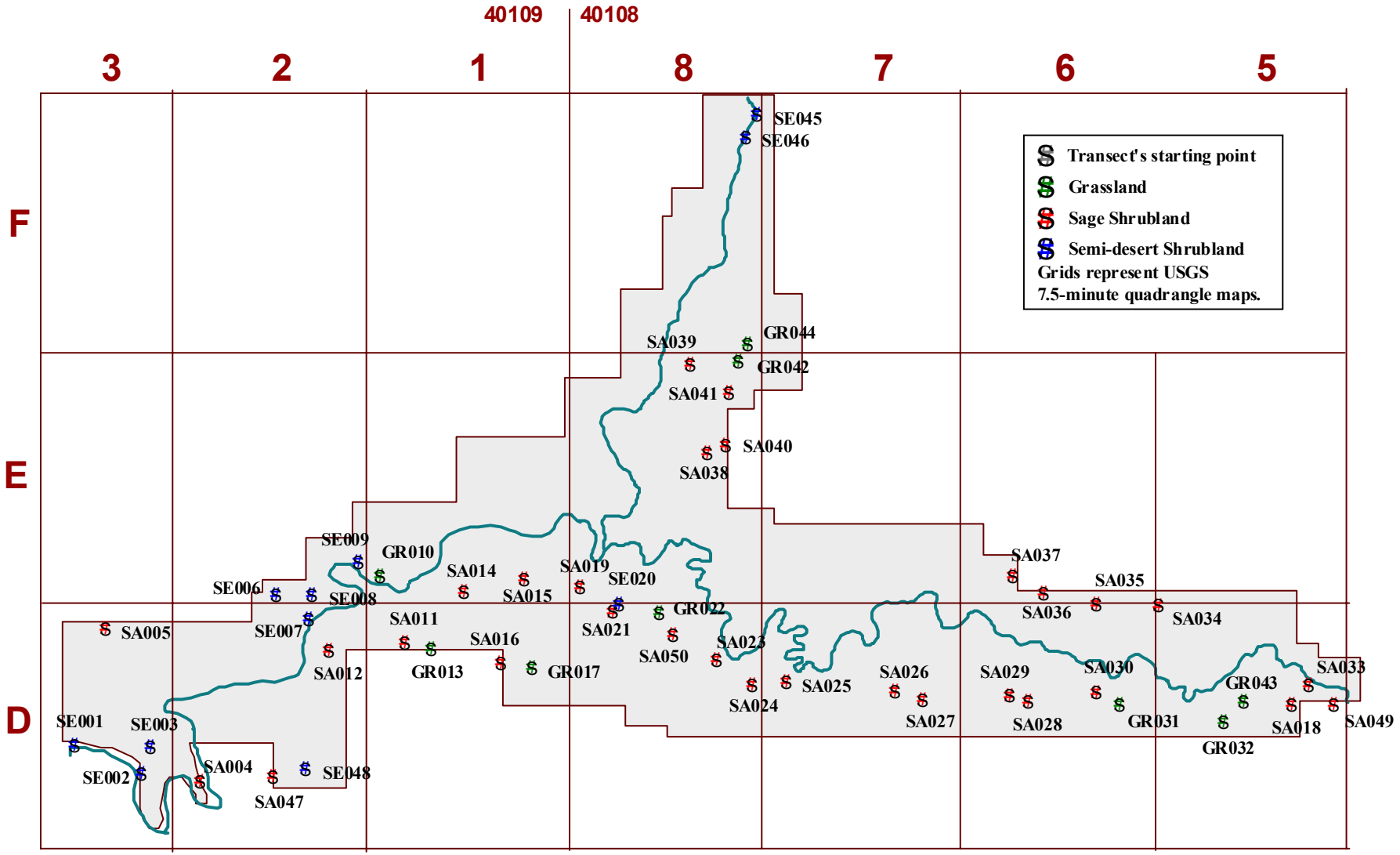
Transects RR040-RR046 (Yampa River).
All river transects are one river-mile in length and are conducted via rafts. The transects' identification numbers indicate the river-miles at which they begin. Belknap's 1993 version of the "Revised Waterproof Dinosaur River Guide" was used to locate all river transect starting points.

UTM locations of Transect RR040-RR046 starting points:

Transect	Zone	Easting	Northing	Transect	Zone	Easting	Northing
RR040	12T	703614	4480301	RR044	12T	707984	4481594
RR041	12T	704902	4481238	RR045	12T	708976	4481148
RR042	12T	705954	4482220	RR046	12T	710550	4480567
RR043	12T	707348	4482636				

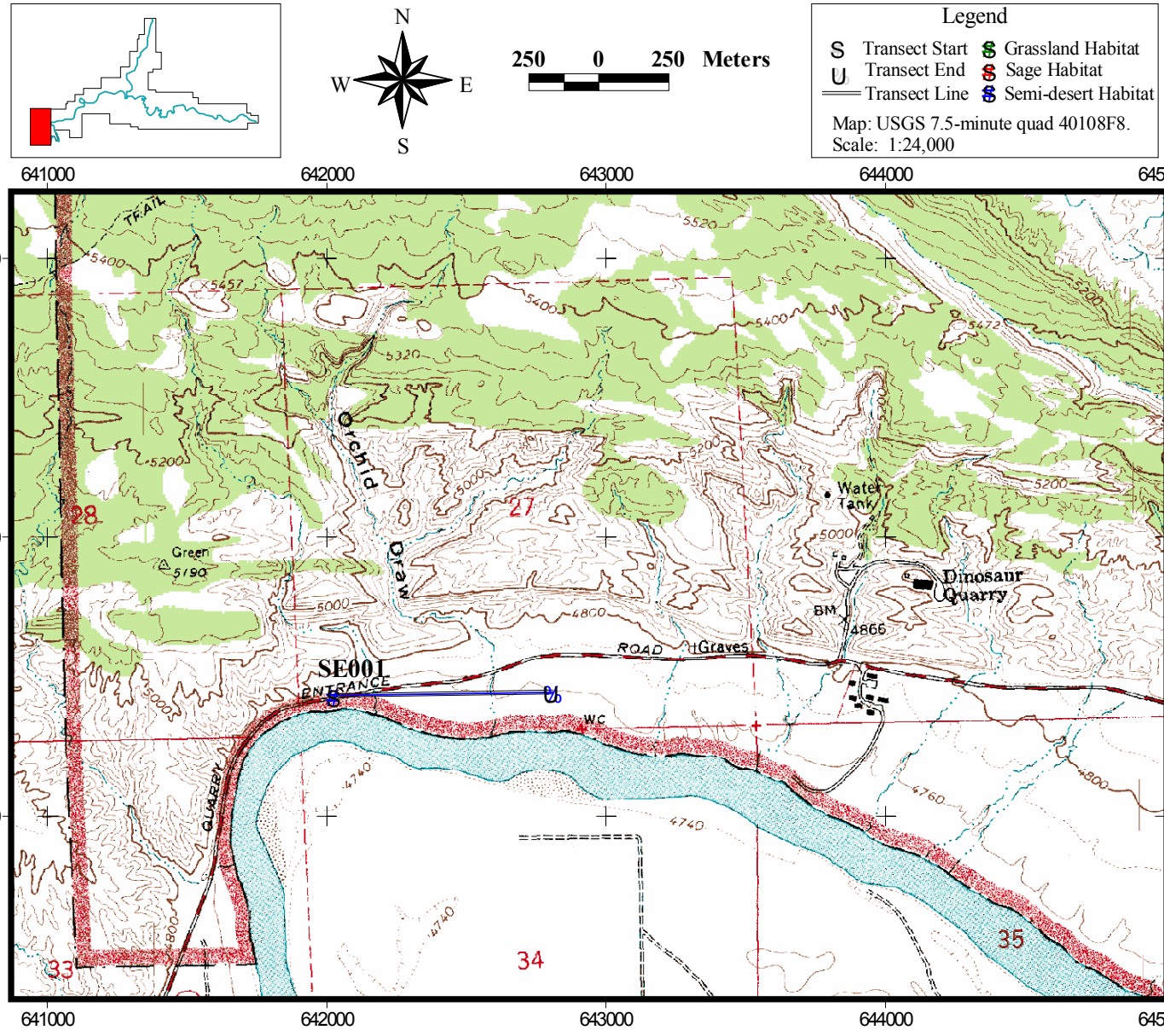


Shrubland / Grassland Transects



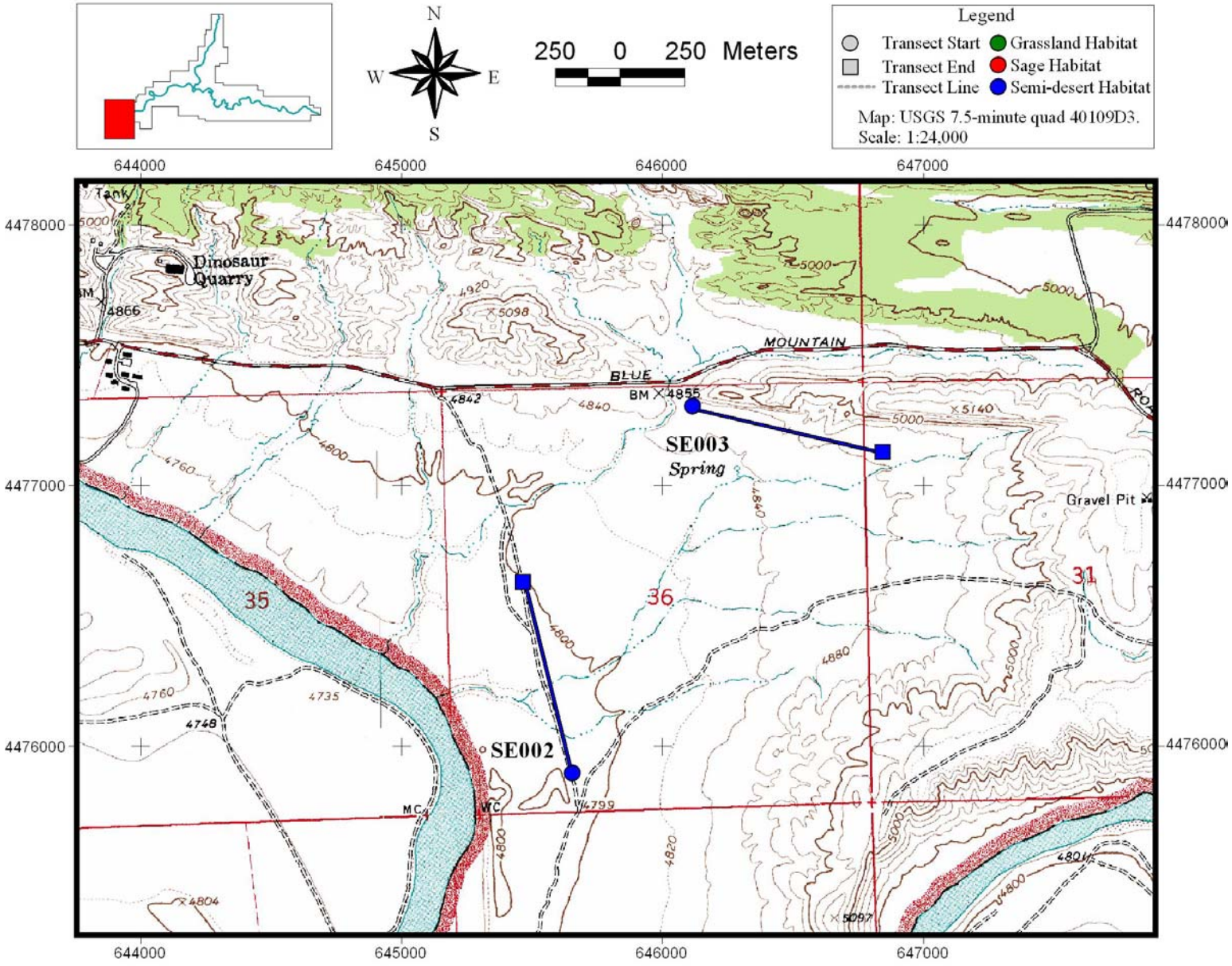
Index to Shrubland / Grassland transects.

Transect SE001.
Access is at the first paved pull-out on the south side of the road as you enter the Monument on Highway 149 near the quarry fee station. From the access point, walk 20 meters due east to the starting point at the beginning of the semi-desert habitat at UTM 12T 642030 4477423. The transect runs along a bearing of 070 degrees for 750 meters toward the last cottonwood in a distant row of trees. The transect ends at UTM 12T 642804 4477439. Use GPS to locate the transect beginning and end, and to measure straight-line distance.

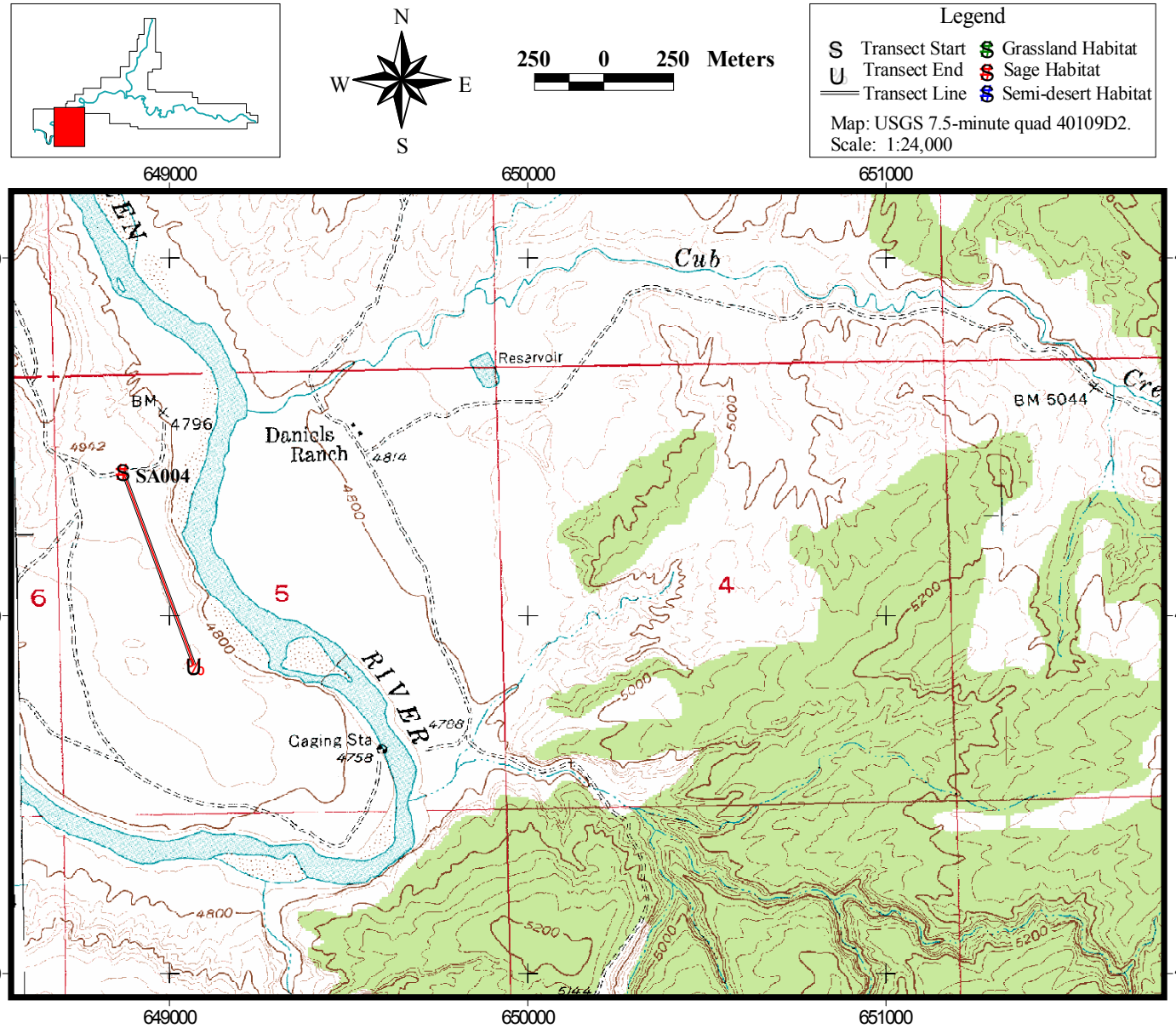


Transect SE002.
Access is at the Auto Tour Site 1, just past the dinosaur quarry fee station. From the access point, walk east 160 meters along the road to an old dirt road heading south. Walk south down the dirt road for 1.6 kilometers to the transect's starting point at UTM 12T 645656 4475897. The transect follows the dirt road north for 750 meters and ends at UTM 12T 645466 4476629. Use GPS to locate the transect beginning and end, and to measure straight-line distance.

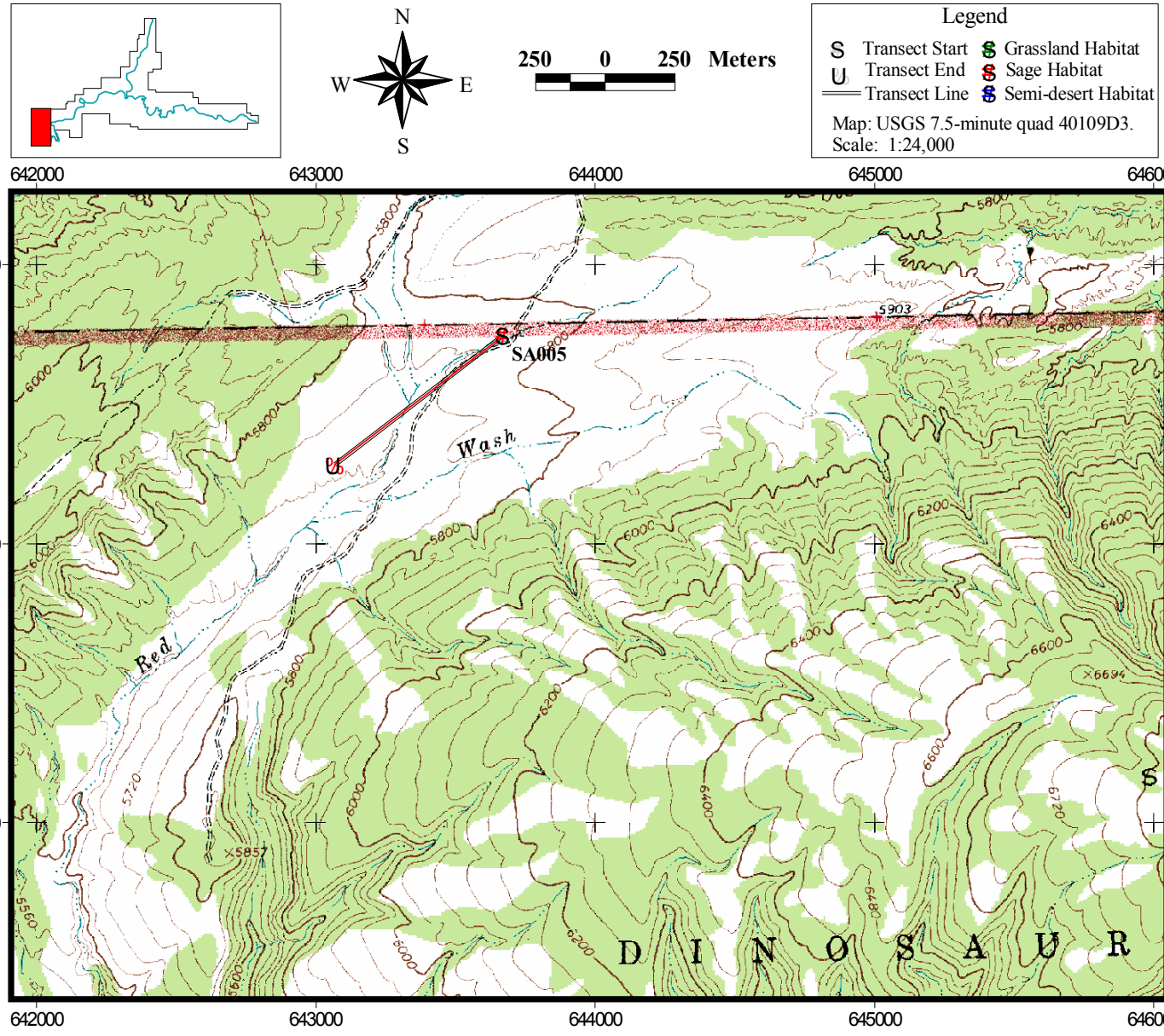
Transect SE003.
Access is at a pull-out on the south side of the Blue Mountain Road, just west of the Sound of Silence trailhead. From the parking area, walk 100 meters along a bearing of 120 degrees to the transect's starting point behind the large rock ridge at UTM 12T 646116 4477305. The transect runs along a bearing of 090 degrees for 750 meters along the inside wall of the ridge, and ends at UTM 646844 4477127. Use GPS to locate the transect beginning and end, and to measure straight-line distance.



Transect SA004.
Access is on the Green River Campground Road. From the Blue Mountain Road, drive east to the Green River Campground Road. Turn onto the road and drive to the power pole closest to the road on the east side, just before the road starts down a steep hill. The power pole, at UTM 12T 648868 4475489, is the transect's starting point. The transect runs along a bearing of 150 degrees for 750 meters toward a distant canyon with a dirt road visible in the canyon. The transect ends at UTM 12T 649118 4474788. Use GPS to locate the transect start and end, and to measure straight-line distance.



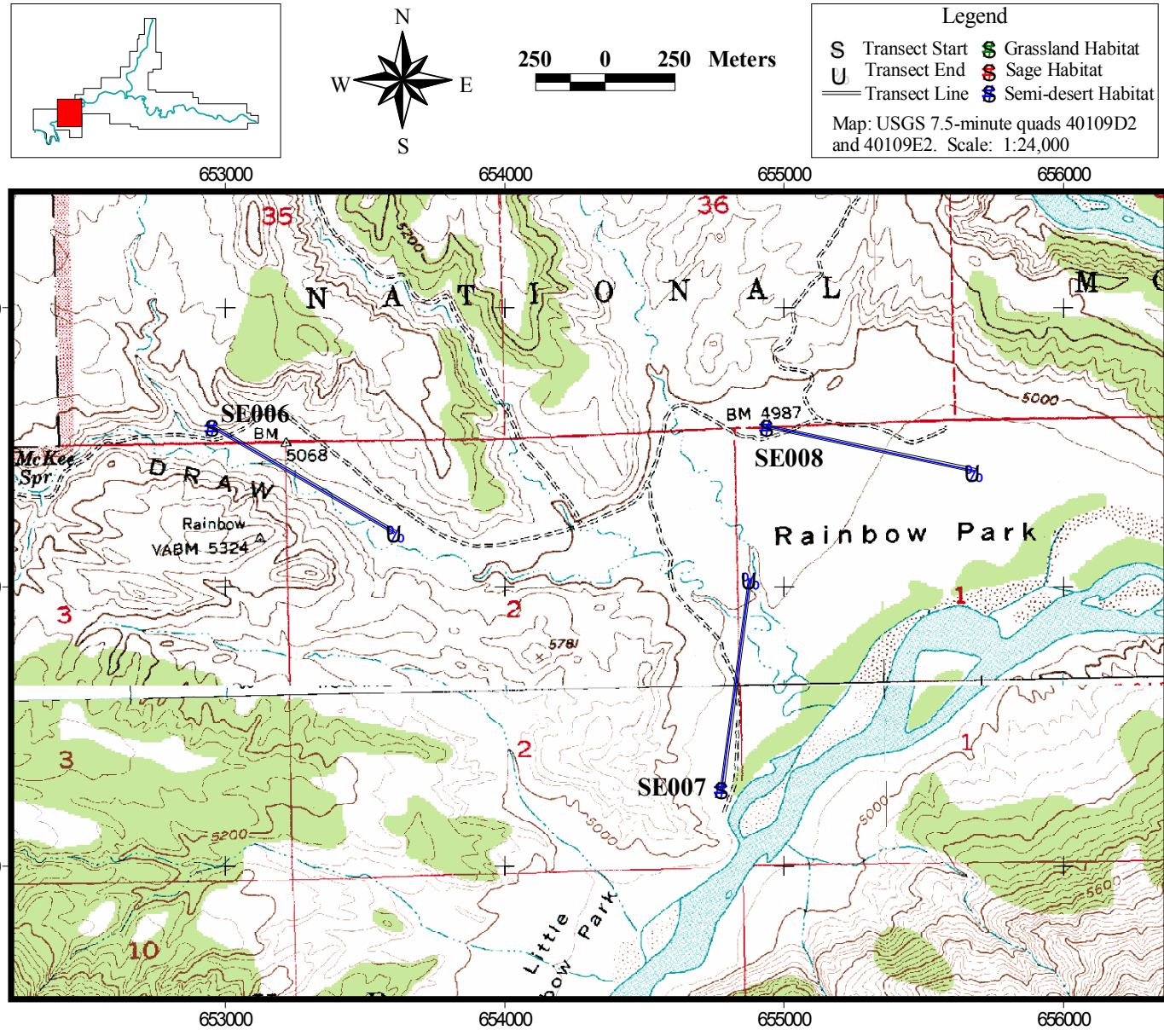
Transect SA005.
Access is from the Island Park Road. At the intersection of the Island Park Road and the Brush Creek Road, turn east onto the Island Park Road. Drive east for 5 miles to a dirt road heading south. Turn onto the dirt road and drive south to the Monument boundary, staying left at any intersections. Park at the Monument gate, and walk 75 meters along a bearing of 230 degrees to the starting point at UTM 12T 643674 4483747. The transect runs along a bearing of 230 degrees for 750 meters and ends at UTM 12T 643062 4483280. Use GPS to locate the transect start and end, and to measure straight-line distance.



Transect SE006.
Access is from the Island Park Road. The transect's starting point is on the Island Park Road at UTM 12T 652957 4485571. The transect runs along a bearing of 110 degrees for 750 meters, and ends at UTM 12T 653603 4485189. Use GPS to locate the transect start and end, and to measure straight-line distance.

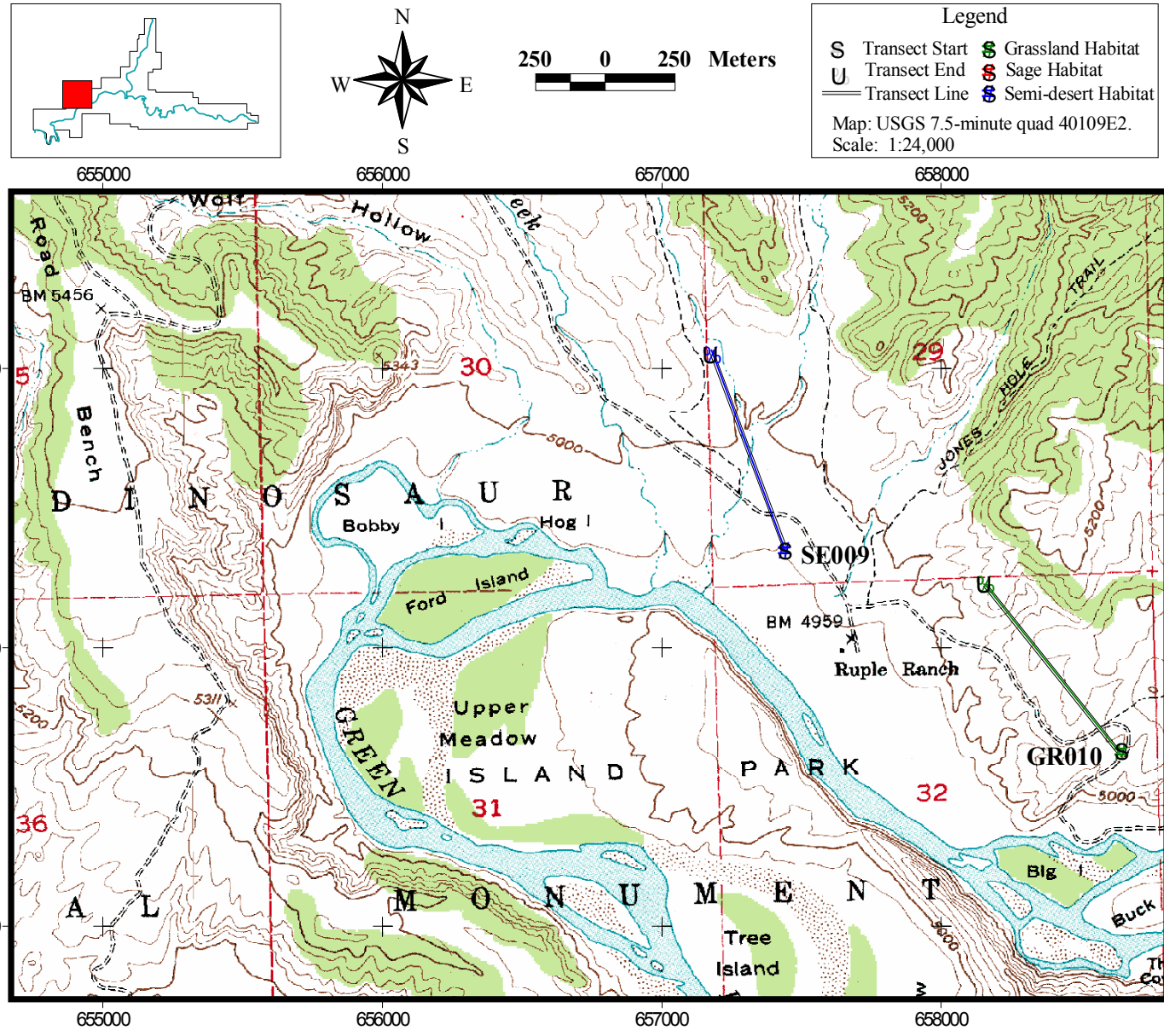
Transect SE007.
Access is from the Rainbow Park Campground Road. Take the Island Park Road east to the turnoff to the Rainbow Park Campground. Turn onto the Rainbow Park Road and drive to the transect's starting point at UTM 12T 654781 4484272. The transect runs along a bearing of 356 degrees for 750 meters, and ends at UTM 12T 654875 4485023. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SE008.
Access is from the Island Park Road. The transect's starting point is on the Island Park road at UTM 12T 65494 4485573. The transect runs along a bearing of 090 degrees for 750 meters, and ends at UTM 12T 655675 4485408. Use GPS to locate the transect start and end, and to measure straight-line distance.

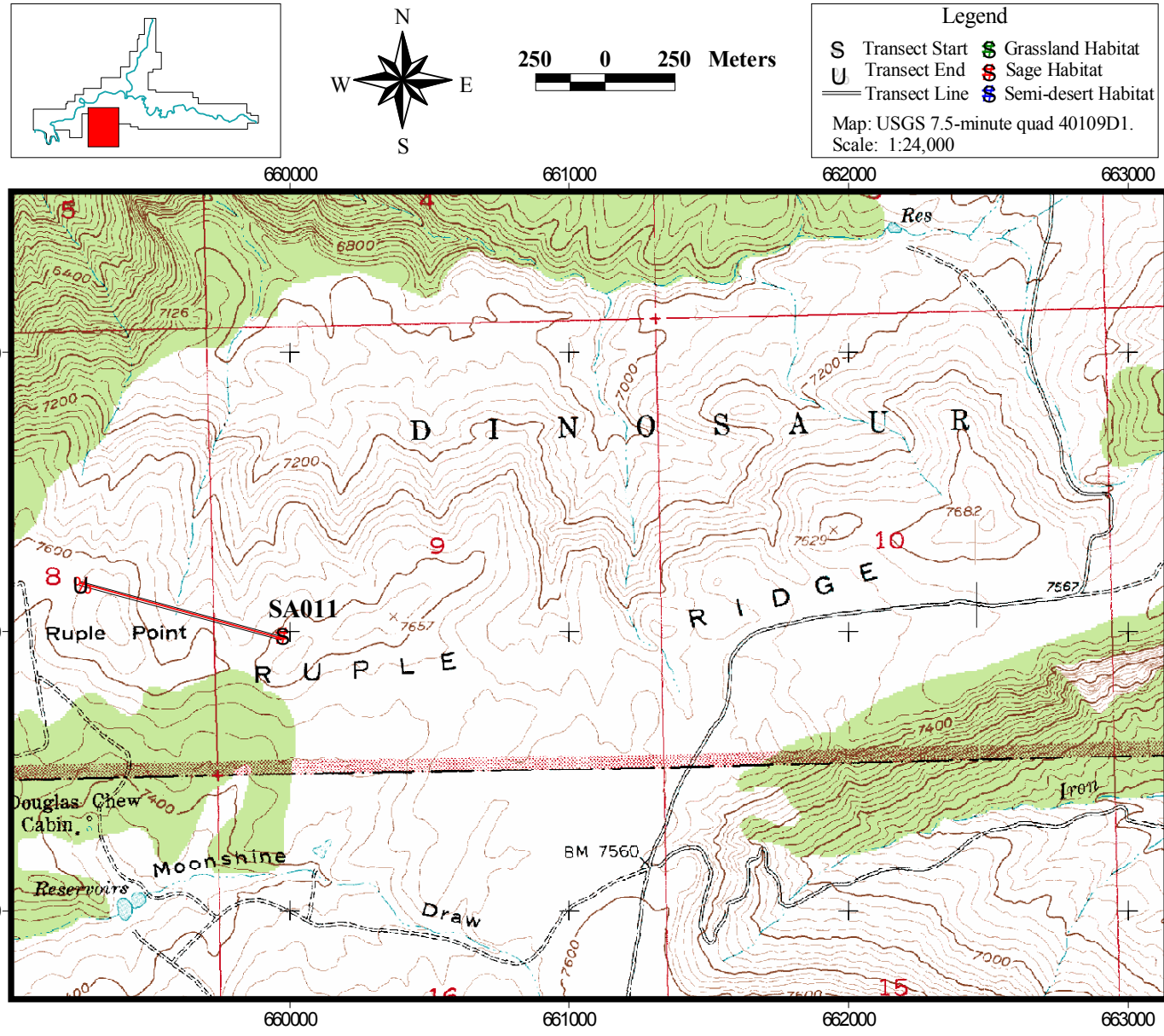


Transect SE009.
Access is from the Island Park Road. The transect's starting point is south of the road at UTM 12T 657447 4487350. The transect runs along a bearing of 320 degrees for 750 meters and ends at UTM 12T 657176 4488051. Use GPS to locate the transect start and end, and to measure straight-line distance.

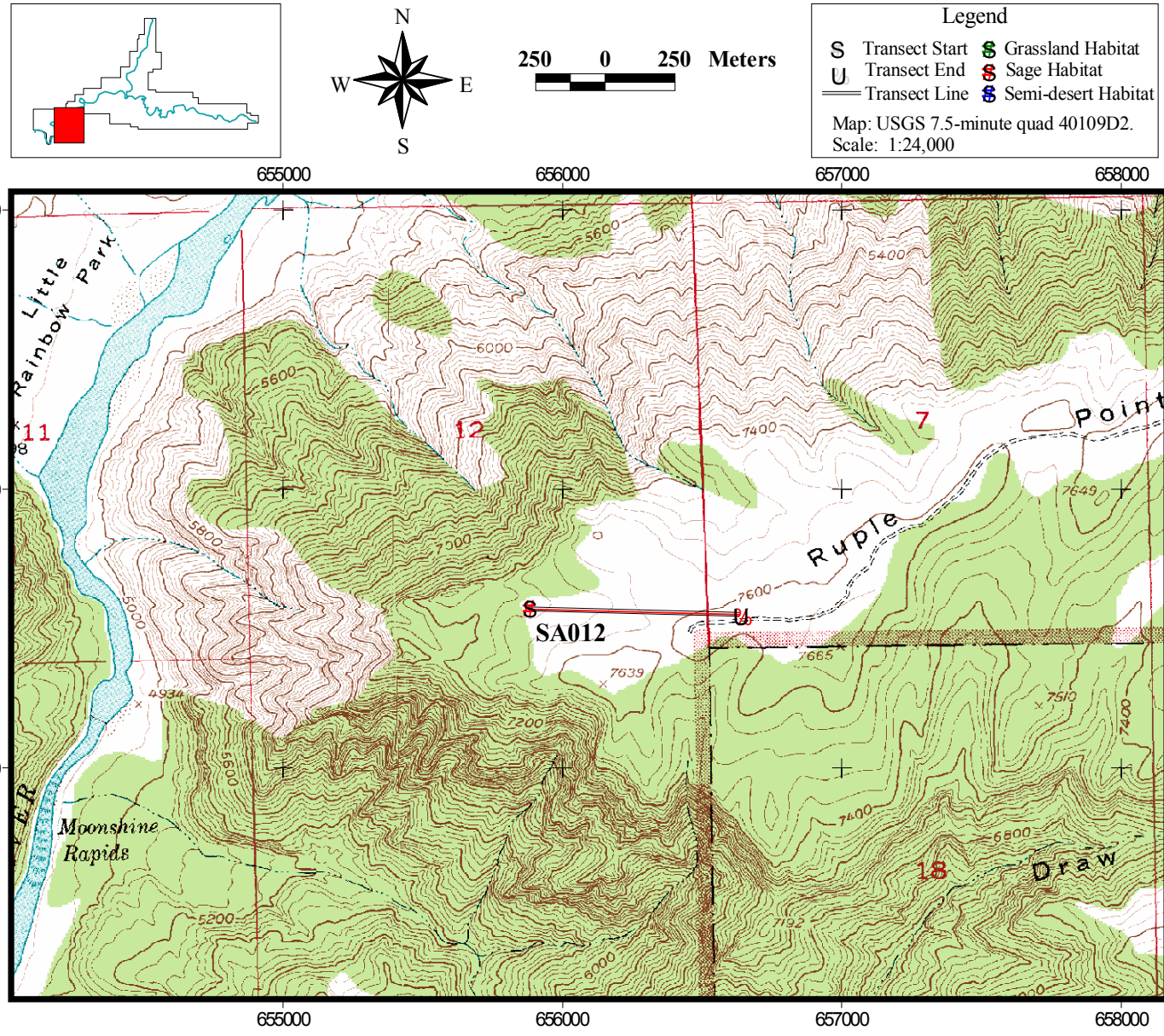
Transect GR010.
Access is from the end of the Island Park Road. The transect's starting point is on the road at UTM 12T 658654 4486630. The transect runs along a bearing of 300 degrees for 750 meters and ends at UTM 12T 658153 4487227. Use GPS to locate the transect start and end, and to measure straight-line distance.



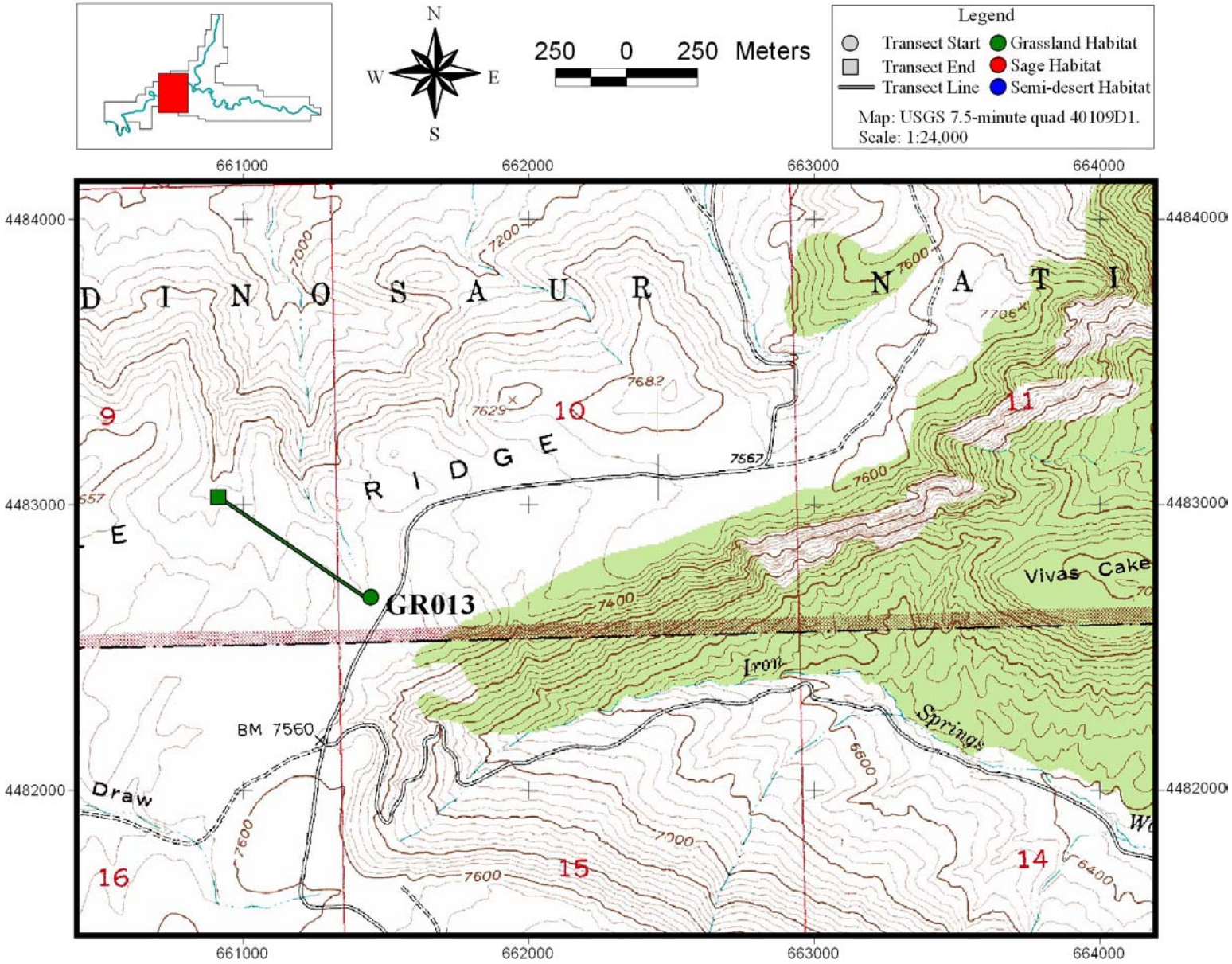
Transect SA011.
Access is from the Ruple Point Trailhead at the Island Park Overlook. From the overlook, walk the Ruple Point trail one mile to the transect's starting point at UTM 12T 659981 4482985. The transect runs along a bearing of 250 degrees for 750 meters (roughly paralleling the trail) through the sage, and ends at UTM 12T 659981 4482985. Use GPS to locate the transect start and end, and to measure straight-line distance.



Transect SA012.
Access is from the Ruple Point Trailhead at the Island Park Overlook. Walk west on the Ruple Point Trail to its end at Ruple Point. From Ruple Point, return east down the trail for 500 meters to the transect's starting point at UTM 12T 655891 4482575. The transect runs along a bearing of 090 degrees for 750 meters (roughly paralleling the trail) through the sage and mountain mahogany mix, and ends at UTM 12T 656641 4482542. Use GPS to locate the transect start and end, and to measure straight-line distance.

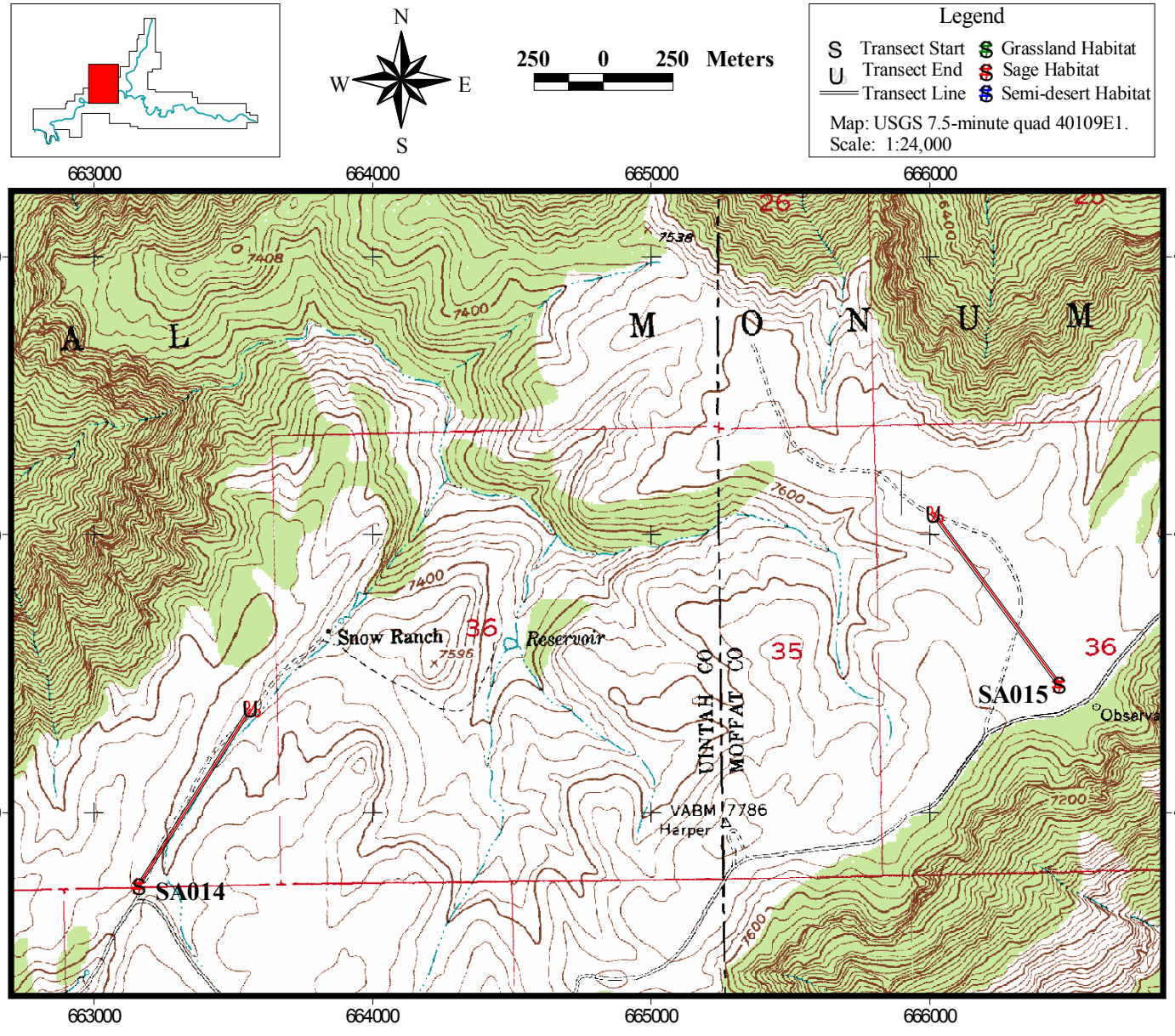


Transect GR013.
Access is from the Harper's Corner Road. The transect's starting point is 25 meters west of the road at UTM 12T 661448 4482674. The transect runs along a bearing of 260 degrees for 750 meters and ends at UTM 12T 660796 4482942. Use GPS to locate the transect start and end, and to measure straight-line distance.



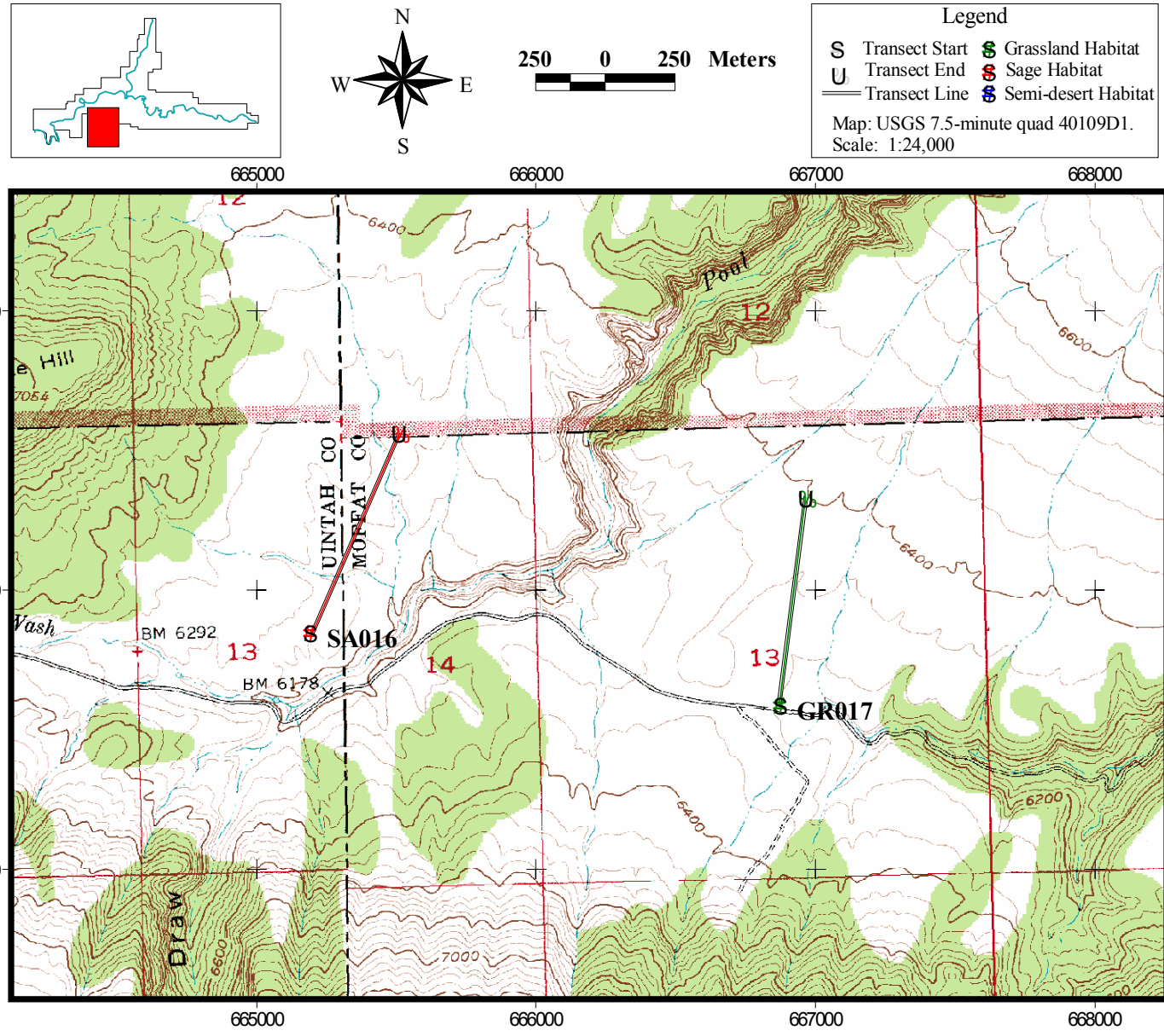
Transect SA14.
Access is from the Harper's Corner road. From the Island Park Overlook, drive north 1.6 miles to a dirt road heading west. Turn west onto the road and follow it uphill to a three-way intersection and park there. The transect's starting point is at the cattle gate on the right fork of the road, at UTM 12T 663169 4485737. Follow the road northeast toward the Snow Ranch for 750 meters to the transect's end at UTM 12T 663564 4486374. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SA15.
Access is from the Harper's Corner Road. From the Echo Park Overlook, walk north across the Harper's Corner Road to the transect's starting point at UTM 12T 666472 4486463. The transect follows a bearing of 300 degrees for 750 meters and ends at UTM 12T 666014 4487074. Use GPS to locate the transect start and end, and to measure straight-line distance.

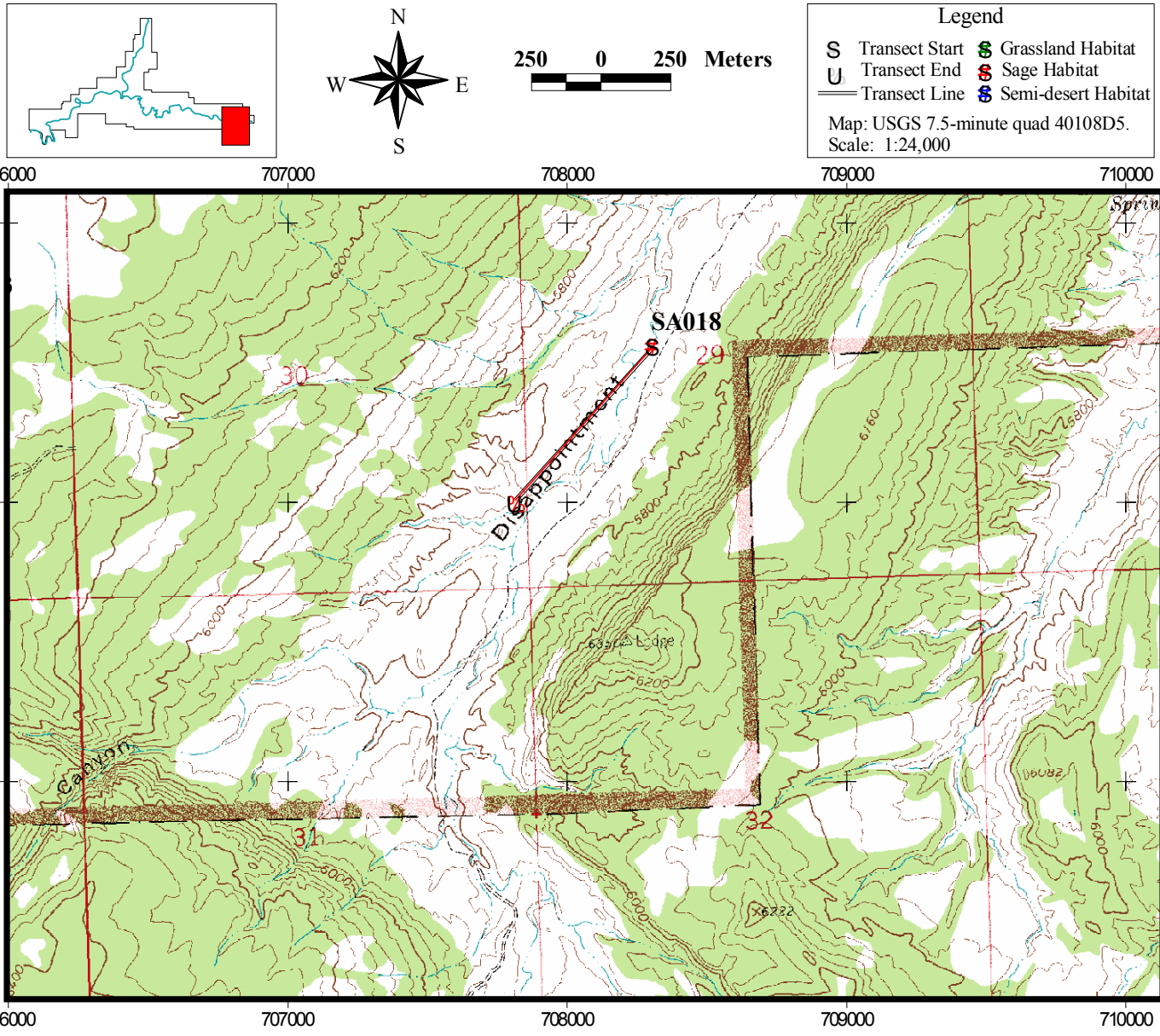


Transect SA16.
Access is from the Echo Park Road at the Monument's boundary and the Utah/Colorado State line. From the cattle guard at the boundary, walk west 0.1 mile to an old bridge. Cross Iron Springs Wash, and climb up onto the sage meadow at UTM 12T 665200 4481846. The transect runs along a bearing of 010 degrees for 750 meters, and ends at UTM 12T 665512 4482561. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect GR017.
Access is on the Echo Park Road just west of its entrance into Sand Canyon. The transect's starting point is on the Road at UTM 12T 666882 4481586. The transect runs along a bearing of 356 degrees for 750 meters, and ends at UTM 12T 666966 4482329. Use GPS to locate the transect start and end, and to measure straight-line distance.



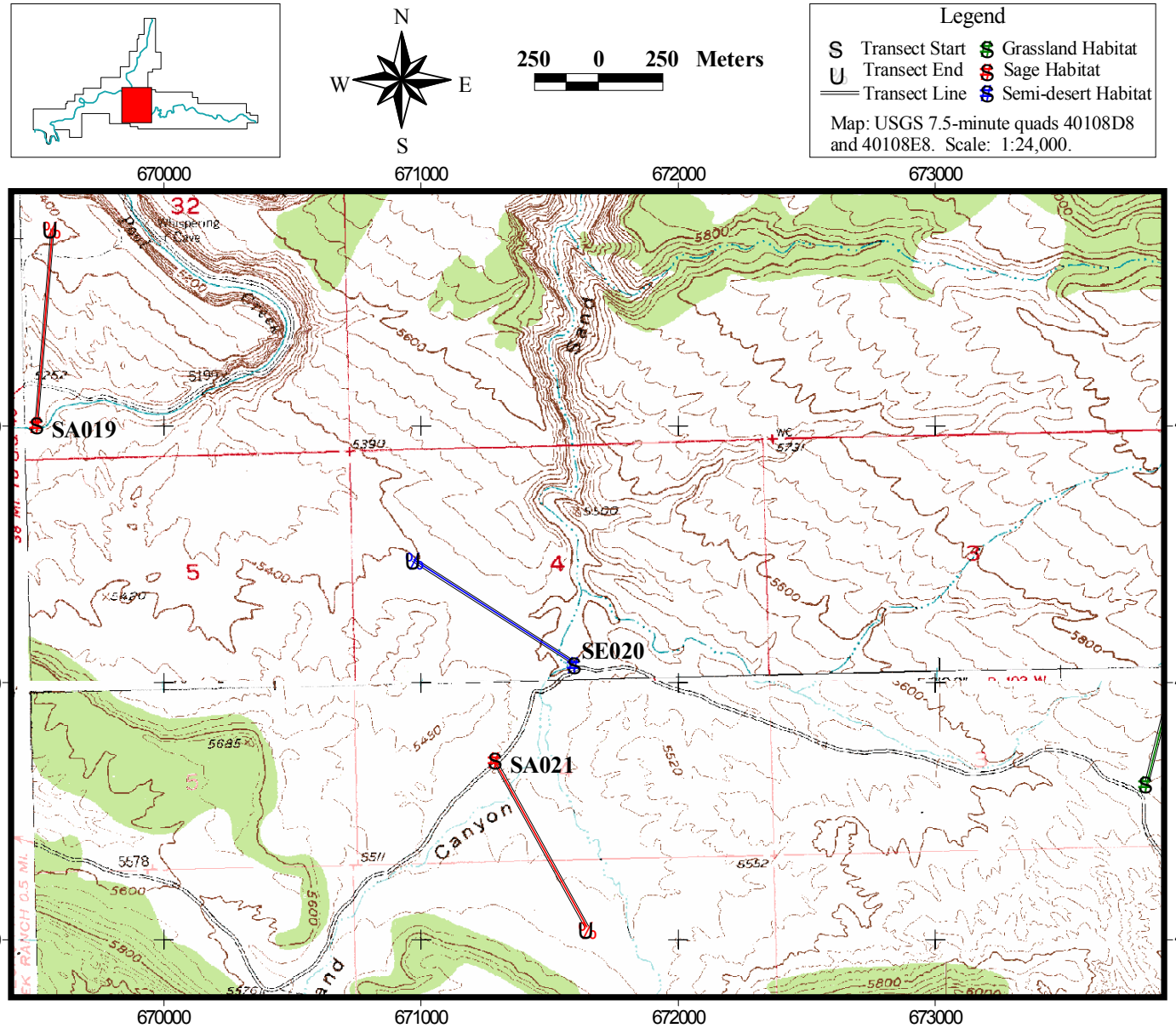
Transect SA 018.
Access is from Deerlodge Park. From the end of the Deerlodge Park Road, hike a trail west along the Yampa River to Disappointment Draw. Find an old cabin in the draw near the river. From the cabin, walk up the center of the draw 1500 meters to the transect's starting point at UTM 12T 708306 4479562. The transect runs up the creek bed for 750 meters and ends at UTM 12T 707805 4478997. Use GPS to locate the transect start and end, and to measure straight-line distance.



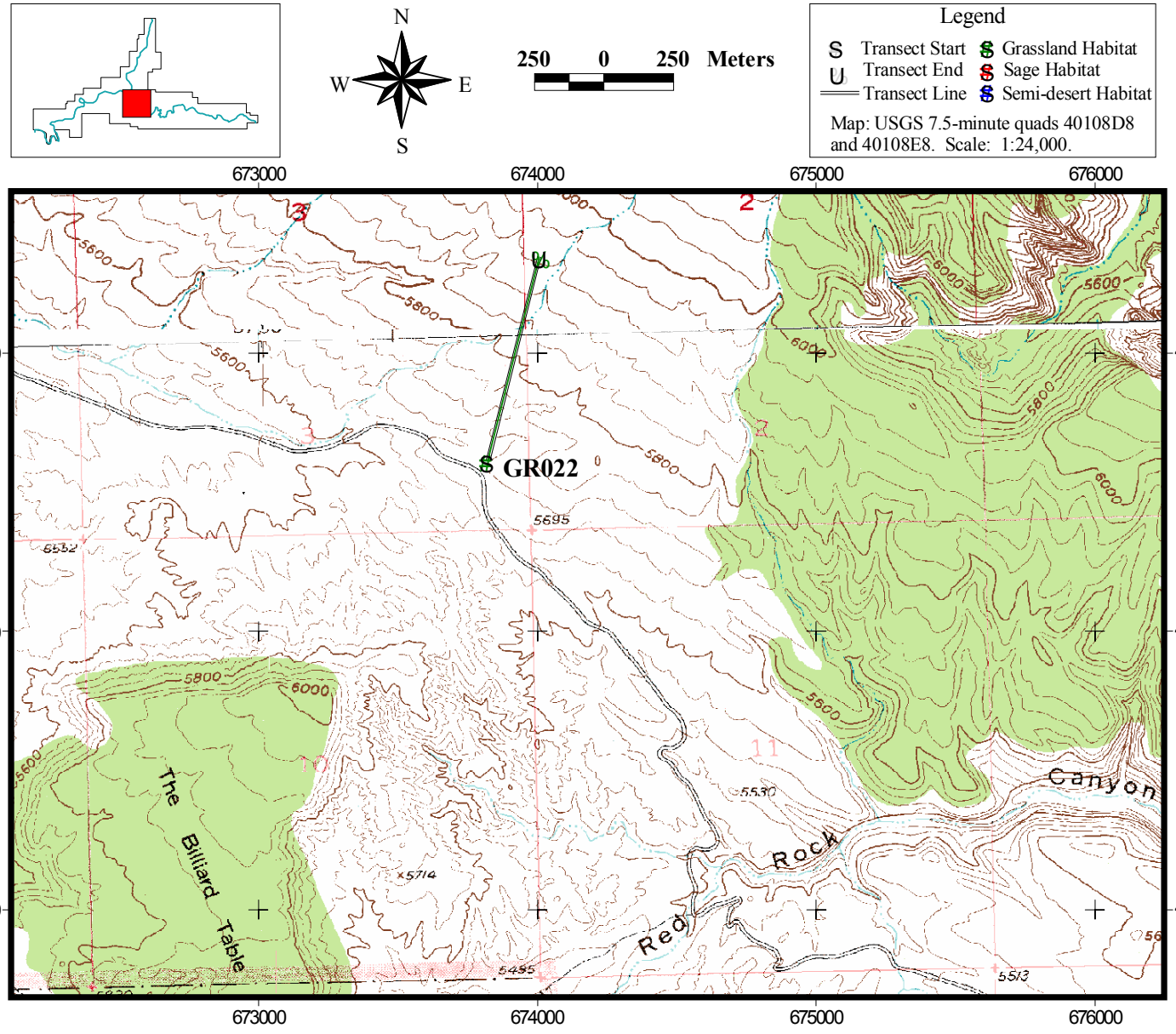
Transect SA019.
Access is from the Echo Park Road. The transect's starting point is on the Echo Park Road at UTM 12T 669514 4486004. The transect runs along a bearing of 360 degrees for 750 meters and ends at UTM 12T 669560 4486763. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SE020.
Access is from the Mantle Ranch Road. The transect's starting point is on the Mantle Ranch Road at UTM 12T 671602 4485069. The transect runs along a bearing of 285 degrees (aim for a white pointed rock in the distance) for 750 meters and ends at UTM 12T 670969 4485472. Use GPS to locate the transect start and end, and to measure straight-line distance.

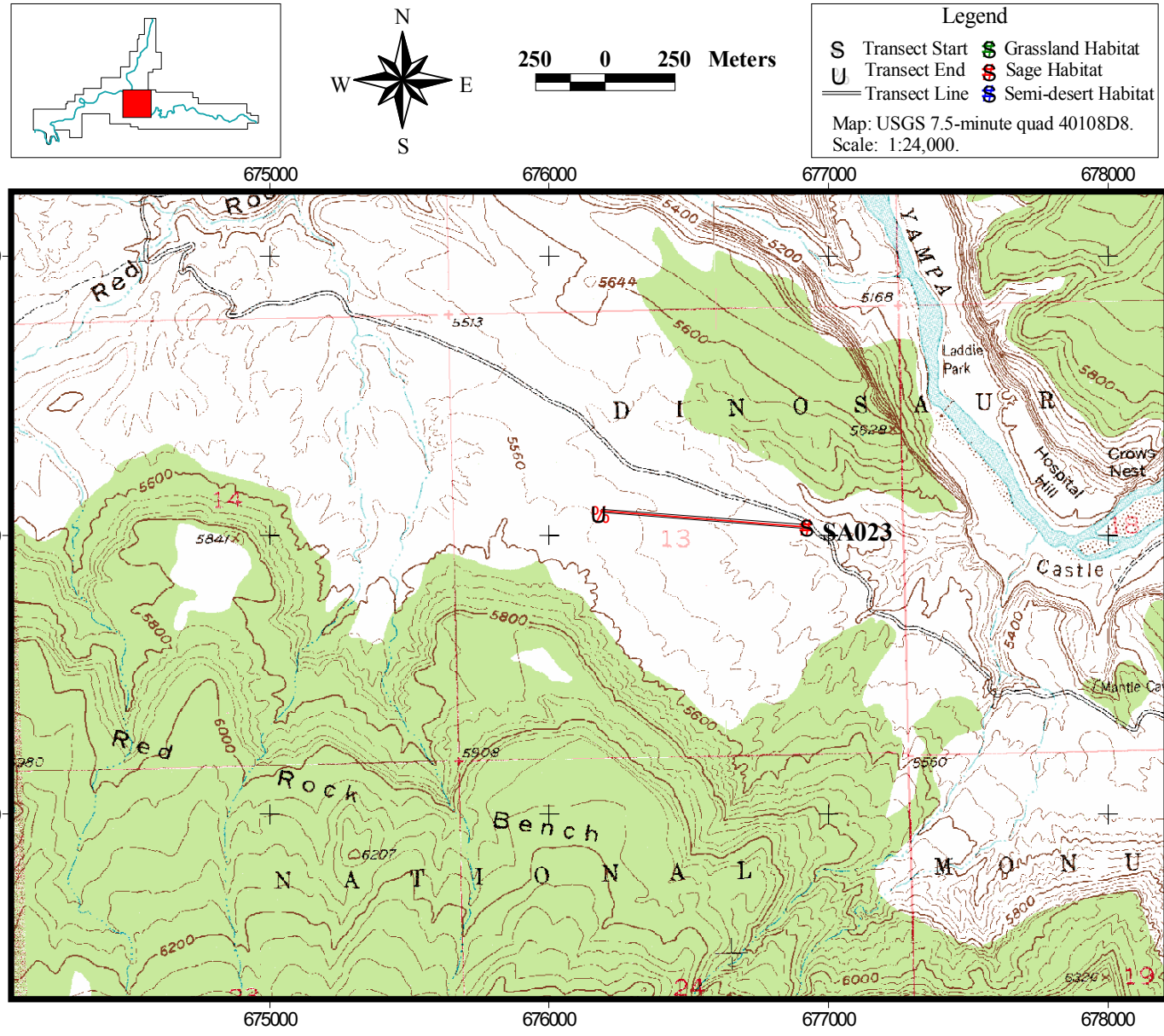
Transect SA021.
Access is from the Mantle Ranch Road. The transect's starting point is on the Mantle Ranch Road at UTM 12T 671296 4484699. The transect runs along a bearing of 160 degrees (aim for where the white canyon ridge touches the horizon) for 750 meters, and ends at UTM 12T 671643 4484035. Use GPS to locate the transect start and end, and to measure straight-line distance.



Transect GR022.
Access is from the Mantle Ranch Road near the Billiard Table. The transect's starting point is on the road at UTM 12T 673825 4484606 (near an "Authorized Vehicles Only" sign). The transect runs along a bearing of 010 degrees (aim for lone skinny juniper) for 750 meters and ends at UTM 12T 674006 4485336. Use GPS to locate the transect start and end, and to measure straight-line distance.

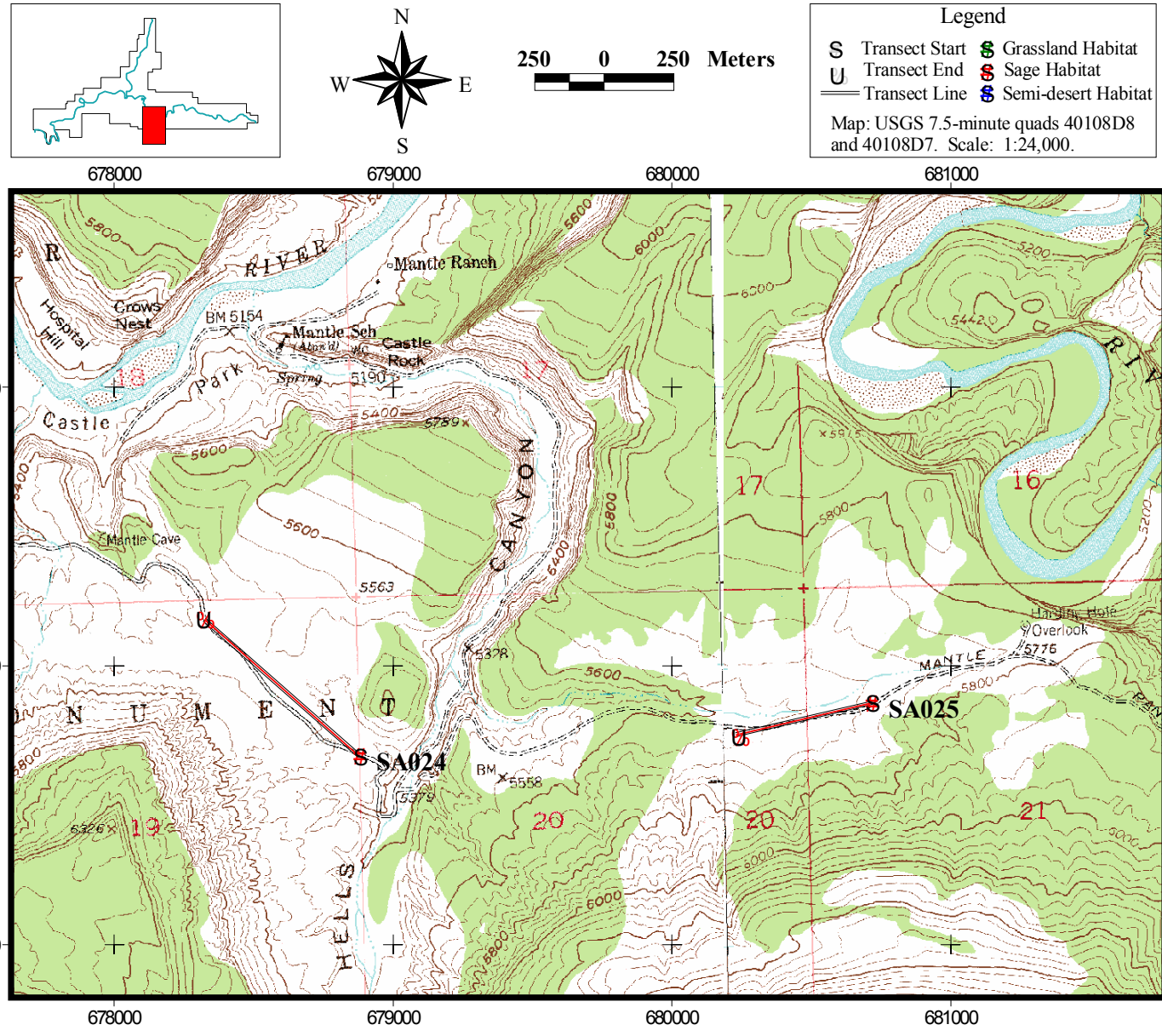


Transect SA023.
Access is from the Mantle Ranch Road across from the Red Rock Bench. The transect's starting point is at UTM 12T 676928 4482030. The transect runs along a bearing of 265 degrees (aim for a white bluff in the distance) for 750 meters, and ends at UTM 12T 676178 4482072. Use GPS to locate the transect start and end, and to measure straight-line distance.



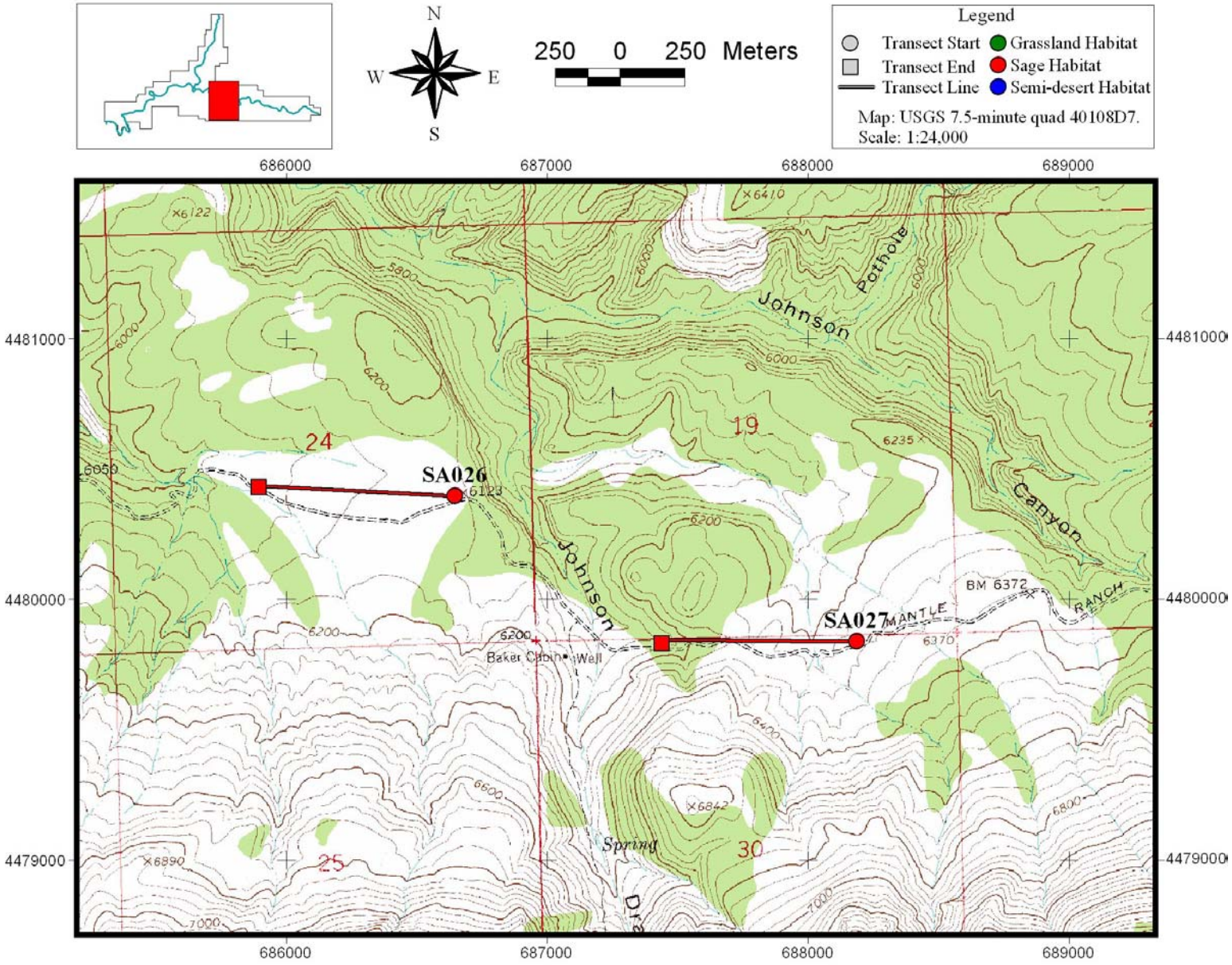
Transect SA024.
Access is from the Mantle Ranch Road, just west of Hells Canyon Turnoff. The transect's starting point is on the road at UTM 12T 678890 4480677. The transect follows the Mantle Ranch road west for 750 meters and ends at UTM 12T 678322 4481166. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SA025.
Access is from the Mantle Ranch Road just west of the Harding Hole Overlook. The transect's starting point is 30 meters south of the road at UTM 12T 0680727 4480867. The transect runs along a bearing of 255 degrees for 500 meters and ends at UTM 12T 680242 4480744. Use GPS to locate the transect start and end, and to measure straight-line distance.



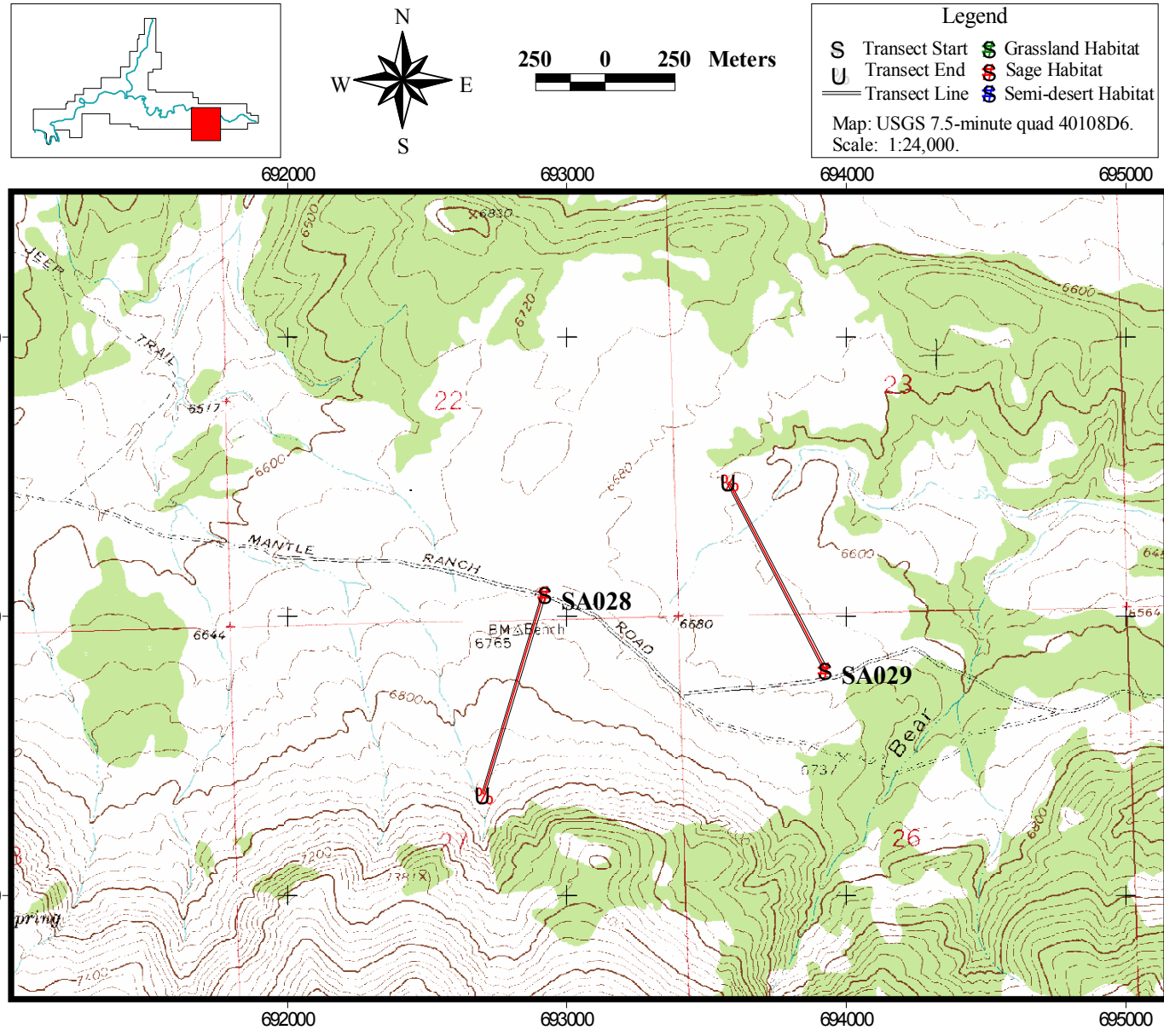
Transect SA026.
Access is from the Mantle Ranch Road just west of the Baker Cabin. The transect's starting point is on the road at UTM 12T 686646 4480398. The transect runs west along the Mantle Ranch Road for 750 meters and ends at UTM 12T 685895 4480432. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SA027.
Access is from the Mantle Ranch Road just east of the Baker Cabin. The transect's starting point is on the road at UTM 12T 688187 4479838. The transect runs west along the Mantle Ranch Road for 750 meters and ends at UTM 12T 687439 4479832. Use GPS to locate the transect start and end, and to measure straight-line distance.



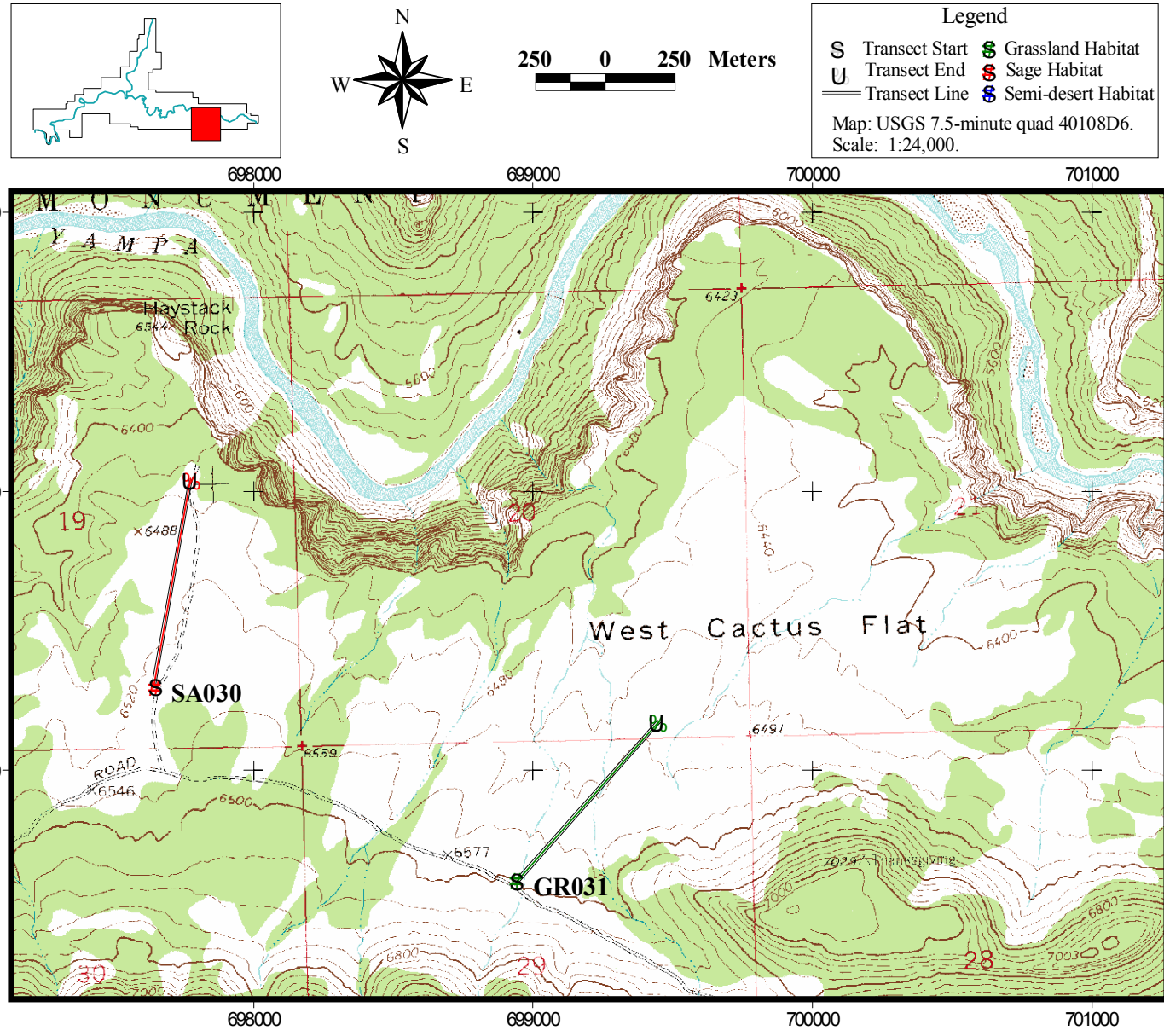
Transect SA028.
Access is from the Mantle Ranch Road. The transect's starting point is on the road at UTM 12T 692928 4480076. The transect runs along a bearing of 190 degrees for 750 meters and ends at UTM 12T 692641 4479391. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SA029.
Access is from the Mantle Ranch Road. The transect's starting point is on the road at UTM 12T 693932 4479807. The transect runs along a bearing of 322 degrees for 750 meters and ends at UTM 12T 693579 4480476. Use GPS to locate the transect start and end, and to measure straight-line distance.

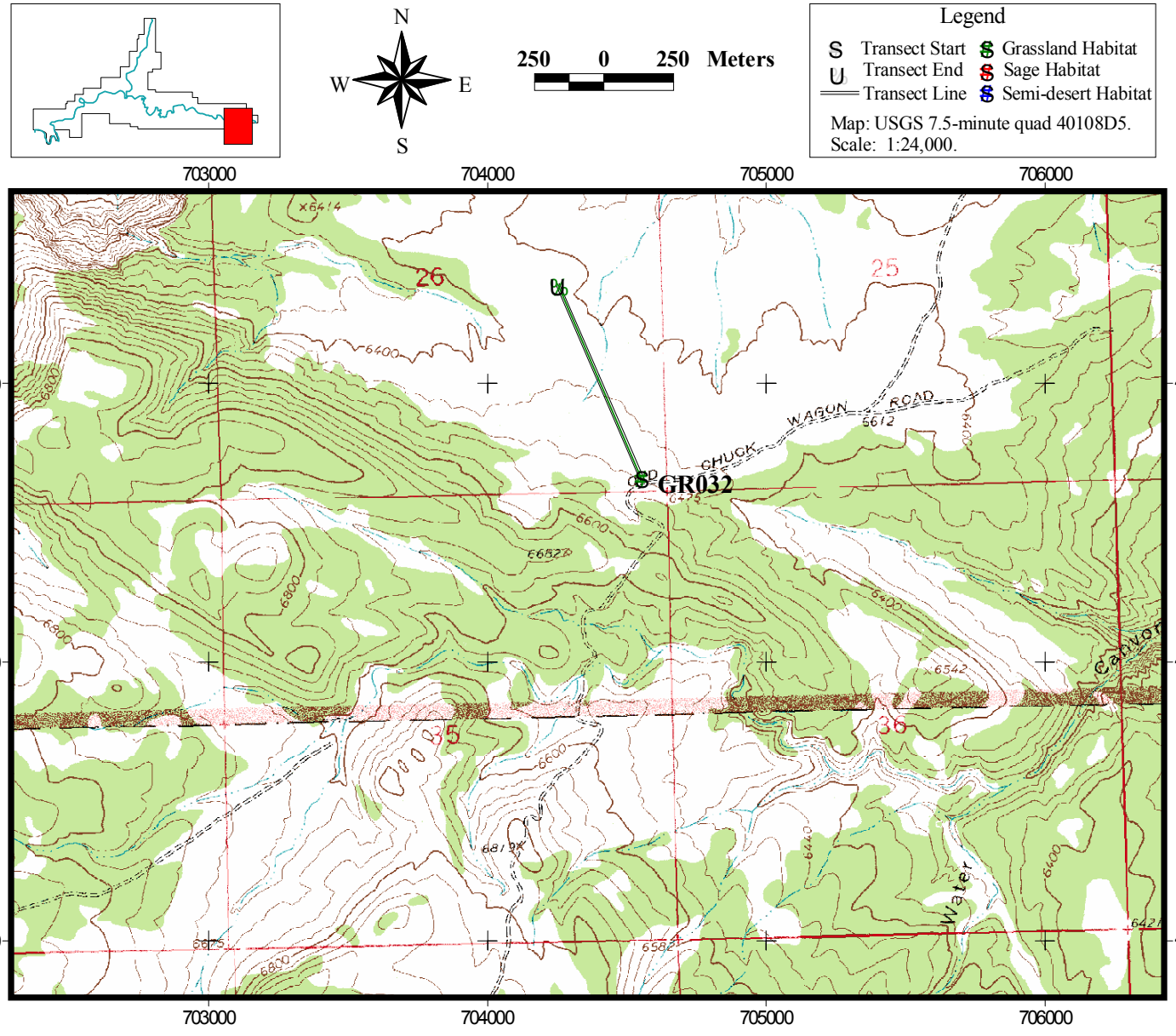


Transect SA030.
Access is from the Mantle Ranch Road at its intersection with the Haystack Rock Road. Walk 275 meters north on the Haystack Rock Road to the transect's starting point at UTM 12T 697656 4480298. The transect runs north along the road for 750 meters and ends at UTM 12T 697773 4481038. Use GPS to locate the transect start and end, and to measure straight-line distance.

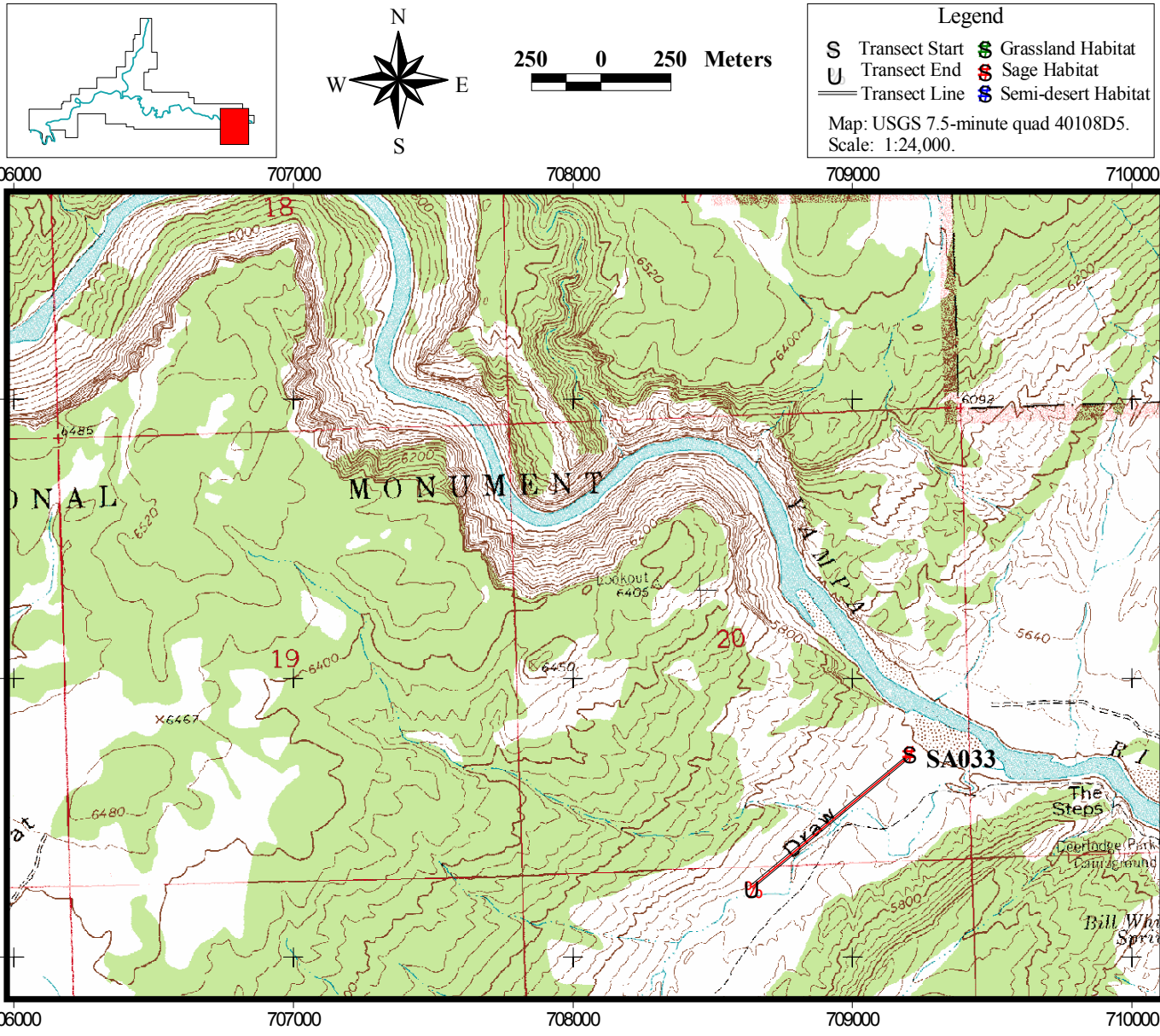
Transect GR031.
Access is from the Mantle Ranch Road at West Cactus Flat. The transect's starting point is on the road at UTM 12T 698950 4479603. The transect runs along a bearing of 020 degrees for 750 meters and ends at UTM 12T 699443 4480170. Use GPS to locate the transect start and end, and to measure straight-line distance.



Transect GR032.
Access is from the Bear Valley Road at the Spurgion Cabin. At the Spurgion Cabin, turn north onto a dirt road and drive to the locked gate at the Monument's boundary. From the boundary, continue to walk along the dirt road to reach East Cactus Flat. The transect's starting point is at UTM 12T 704560 4478658. The transect runs along a bearing of 315 degrees for 750 meters and ends at UTM 12T 704253 4479347. Use GPS to locate the transect start and end, and to measure straight-line distance.

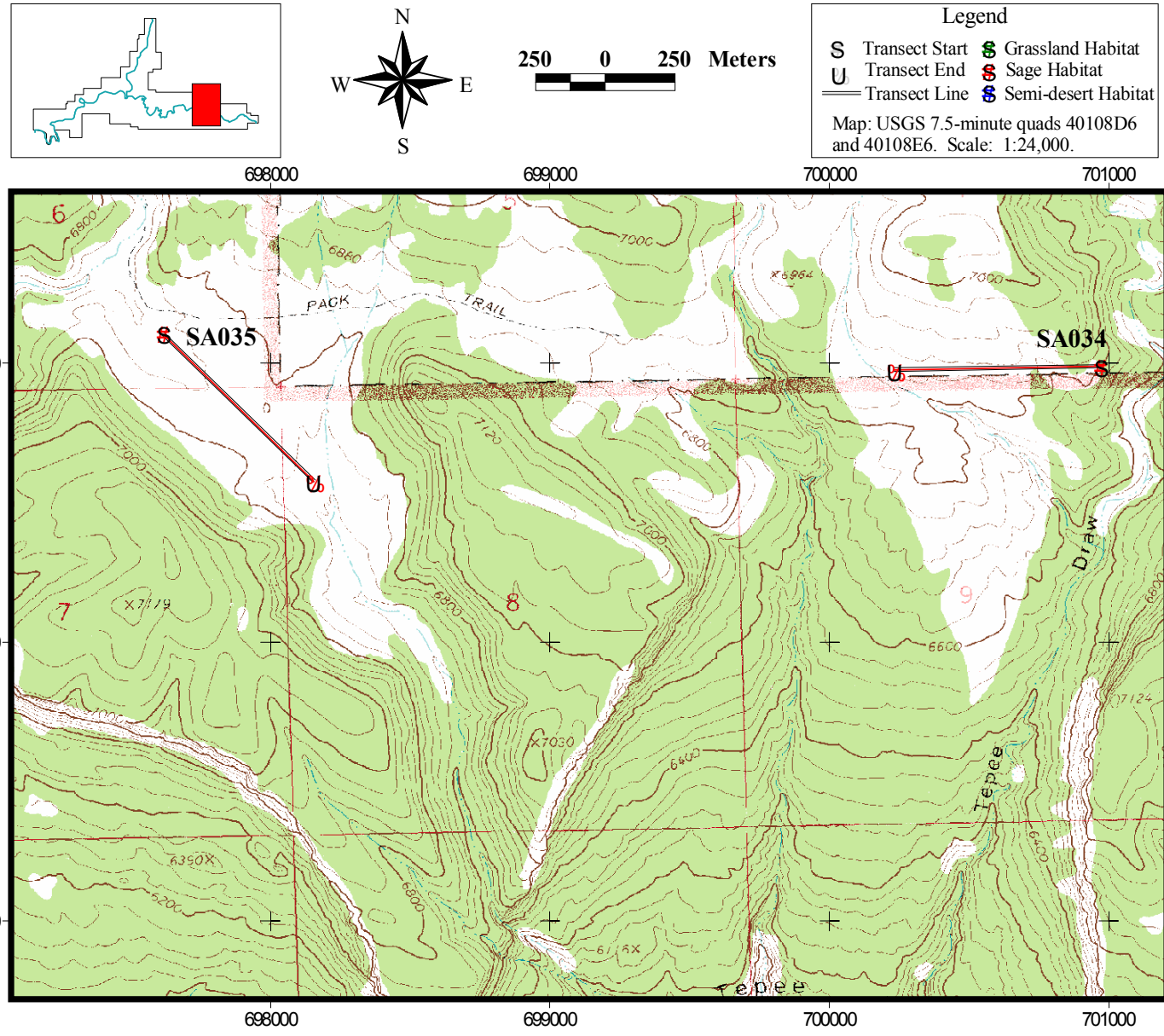


Transect SA033.
Access is from Deerlodge Park. From the end of the Deerlodge Park Road, hike a trail west along the Yampa River to Disappointment Draw. Find an old cabin in the draw near the river. The transect starts at the cabin, at UTM 12T 709213 4480729. The transect runs along a bearing of 210 degrees for 750 meters and ends at UTM 12T 708640 4480243. Use GPS to locate the transect start and end, and to measure straight-line distance.



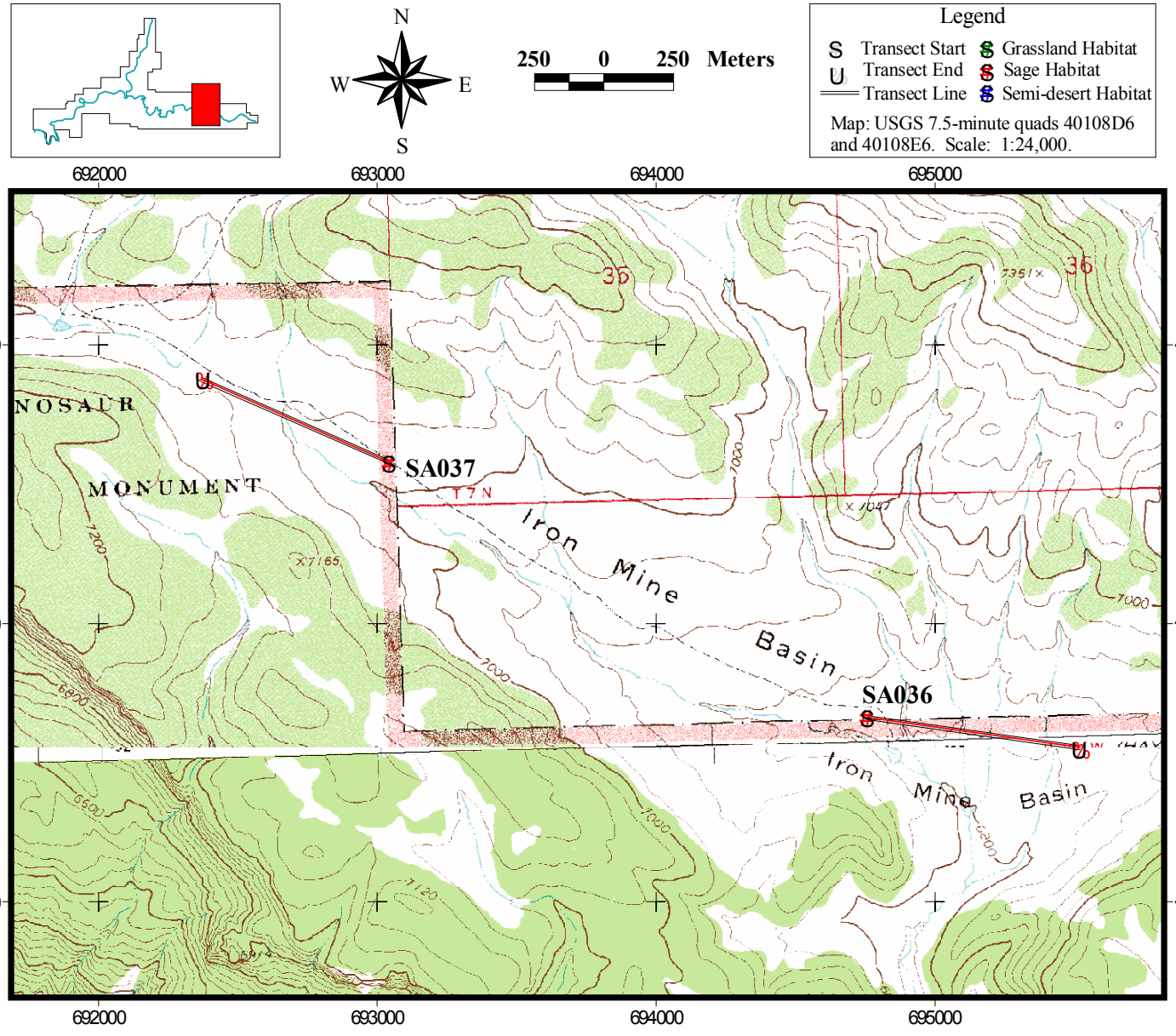
Transect SA034.
Access is from Iron Mine Basin on Douglas Mountain. From the far east end of Iron Mine basin, walk due east over a steep hill and cross Brown's Draw. At Brown's Draw, find a dirt road and walk the road east through a large sage meadow. Continue east after the road dies out. Just before dropping into Tepee Draw, find the transect's starting point at UTM 12T 700983 4484982. The transect runs along a bearing of 265 degrees (it follows the boundary fence) for 750 meters and ends at UTM 12T 700234 4484966. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SA035.
Access is from Iron Mine Basin on Douglas Mountain. From the far east end of Iron Mine basin, Walk due east over a steep hill and cross Brown's Draw. At Brown's Draw, find a dirt road and walk the road east to an intersection with another dirt road. Take the right fork at the intersection and walk 100 meters on the road to the transect's starting point at UTM 12T 697626 4485101. The transect runs directly through the center of the sage meadow along a bearing of 120 degrees for 750 meters and ends at UTM 12t 698155 4484567. Use GPS to locate the transect start and end, and to measure straight-line distance.



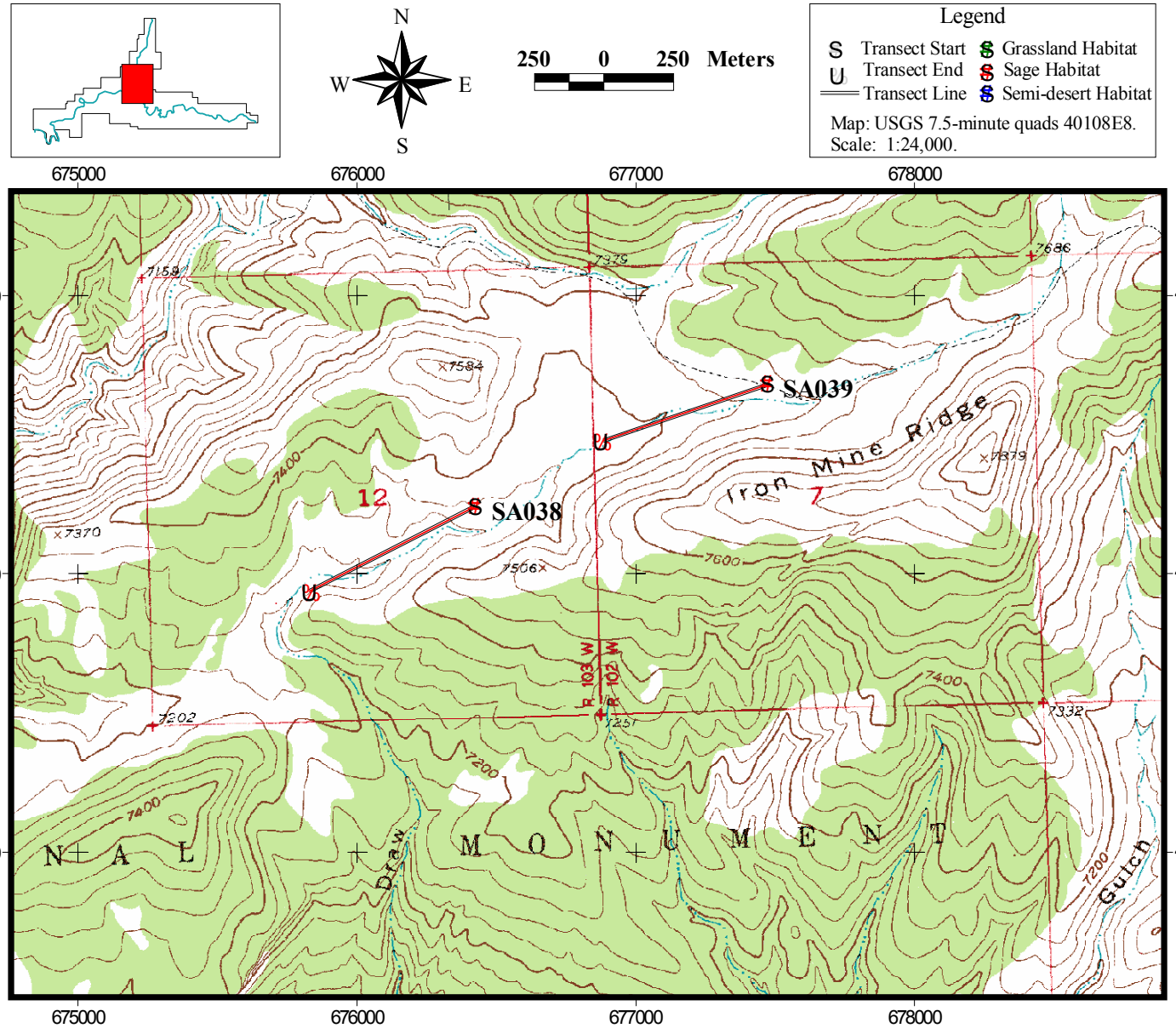
Transect SA036.
Access is from Iron Mine Basin on Douglas Mountain. The transect's starting point is at a gate on the four wheel drive road leading into the basin at UTM 12t 694764 4485661. The transect runs along a bearing of 086 degrees for 750 meters, and ends at UTM 12T 695520 4485545. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SA037.
Access is from Iron Mine Basin on Douglas Mountain. The transect's starting point is at a gate on the four wheel drive road leading into the basin at UTM 12T 692815 4486667. The transect runs along a bearing of 280 degrees for 750 meters and ends at UTM 12T 692376 4486871. Use GPS to locate the transect start and end, and to measure straight-line distance.



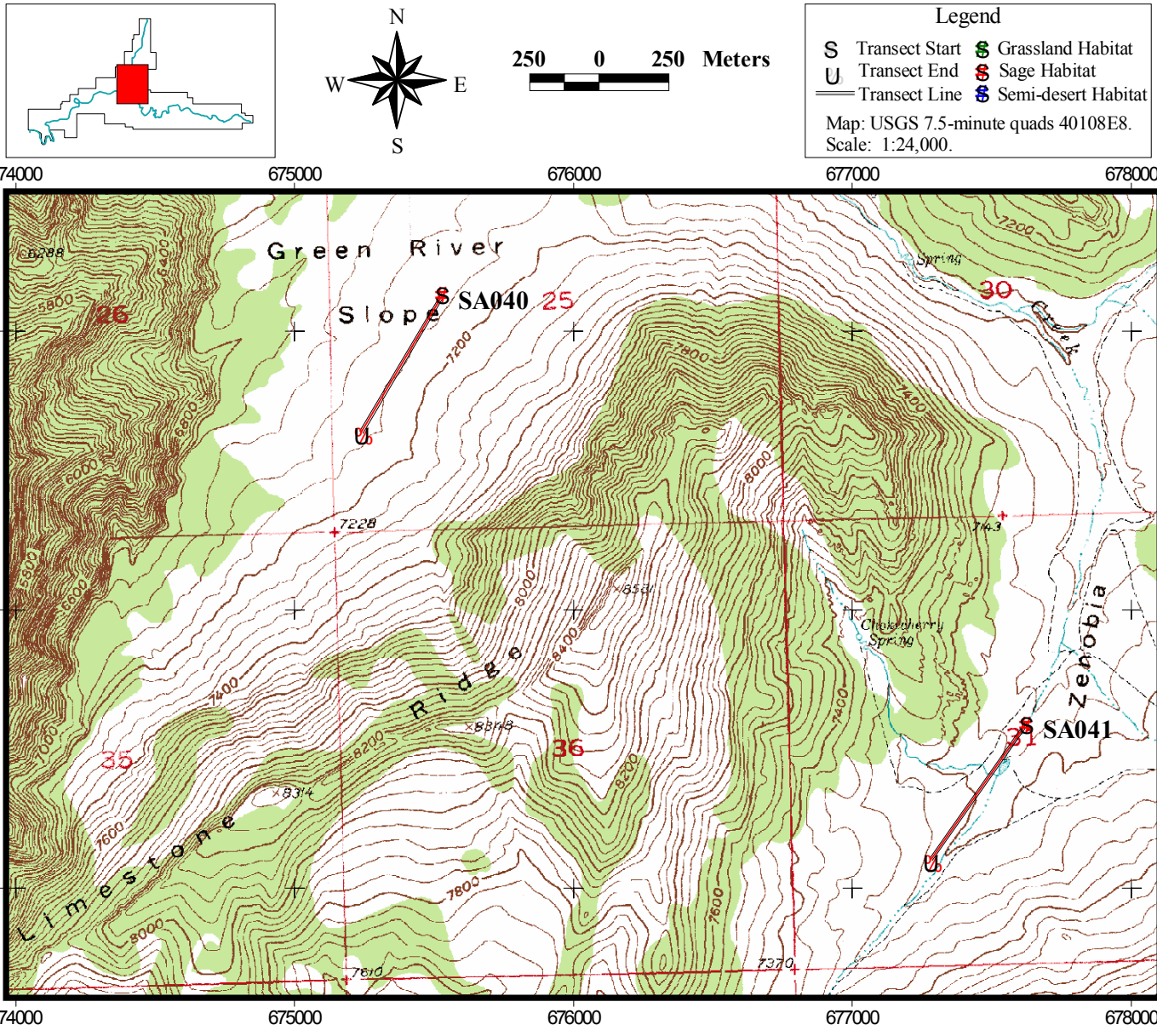
Transect SA038.
Access is on the Zenobia Basin Road on Douglas Mountain. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the Monument near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Park at the boundary and walk southwest in Iron Mine Draw one kilometer to the transect's starting point at UTM 12T 676429 4493240. The transect runs downstream in the draw for 750 meters and ends at UTM 12T 675896 4492980. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SA039.
Access is on the Zenobia Basin Road on Douglas Mountain. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the Monument near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. The transect's starting point is at the boundary at UTM 12T 677478 4493685. The transect runs downstream in Iron Mine Draw for 750 meters and ends at UTM 12T 676895 4493475. Use GPS to locate the transect start and end, and to measure straight-line distance.

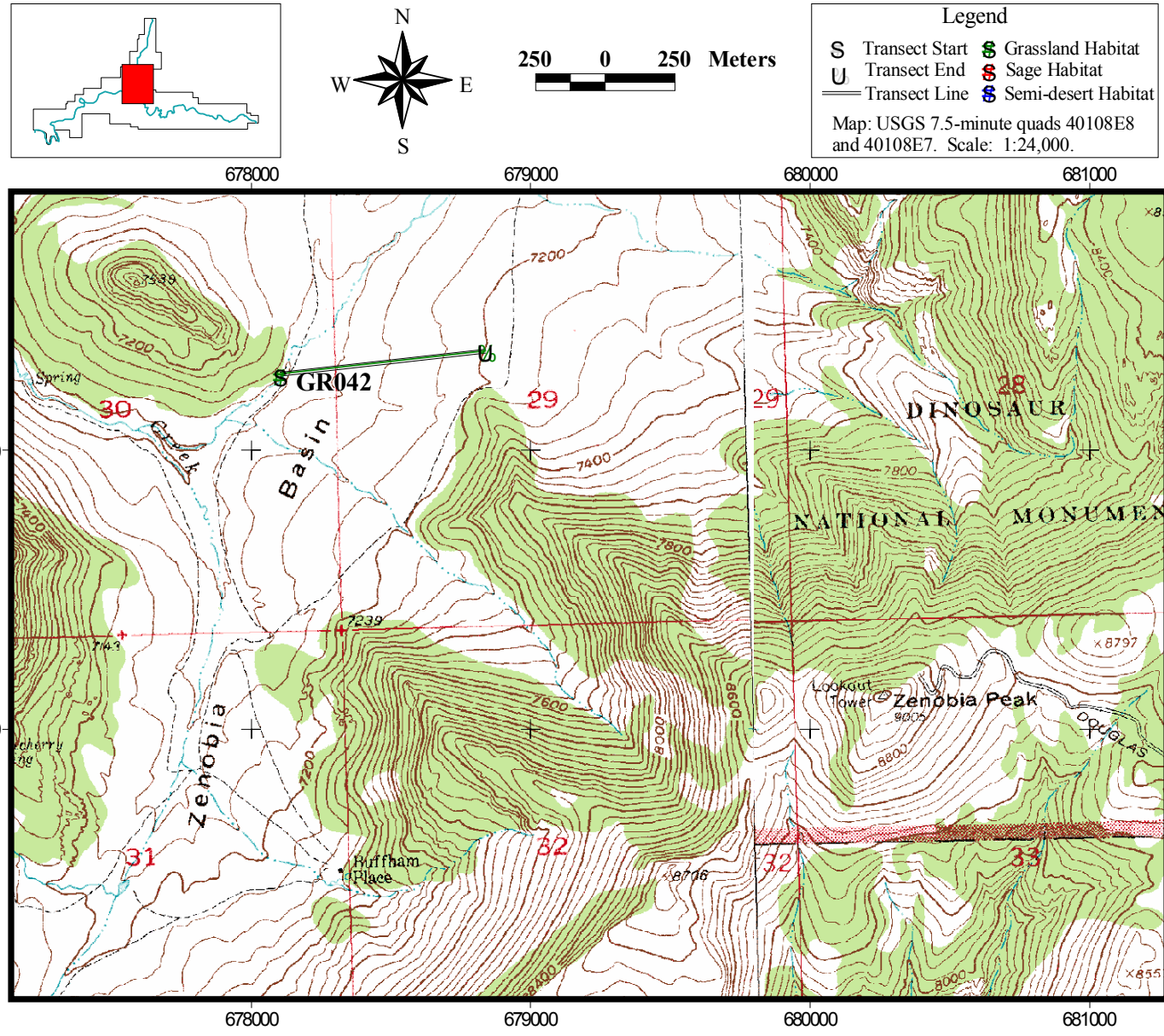


Transect SA040.
Access is in Zenobia Basin. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the park near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Continue past the boundary, and at the intersection at Limestone Draw, turn north (right). Follow the rough road into Zenobia Basin. Pass the Old Buffam Place and drive to a large red-rock butte (USGS point 7539). Park at the butte, and walk around its southwest side to the Green River Slope. The transect's starting point is at UTM 12T 675521 4498136. The transect runs along a bearing of 200 degrees for 750 meters and ends at UTM 12T 677883 4497255. Use GPS to locate the transect start and end, and to measure straight-line distance.

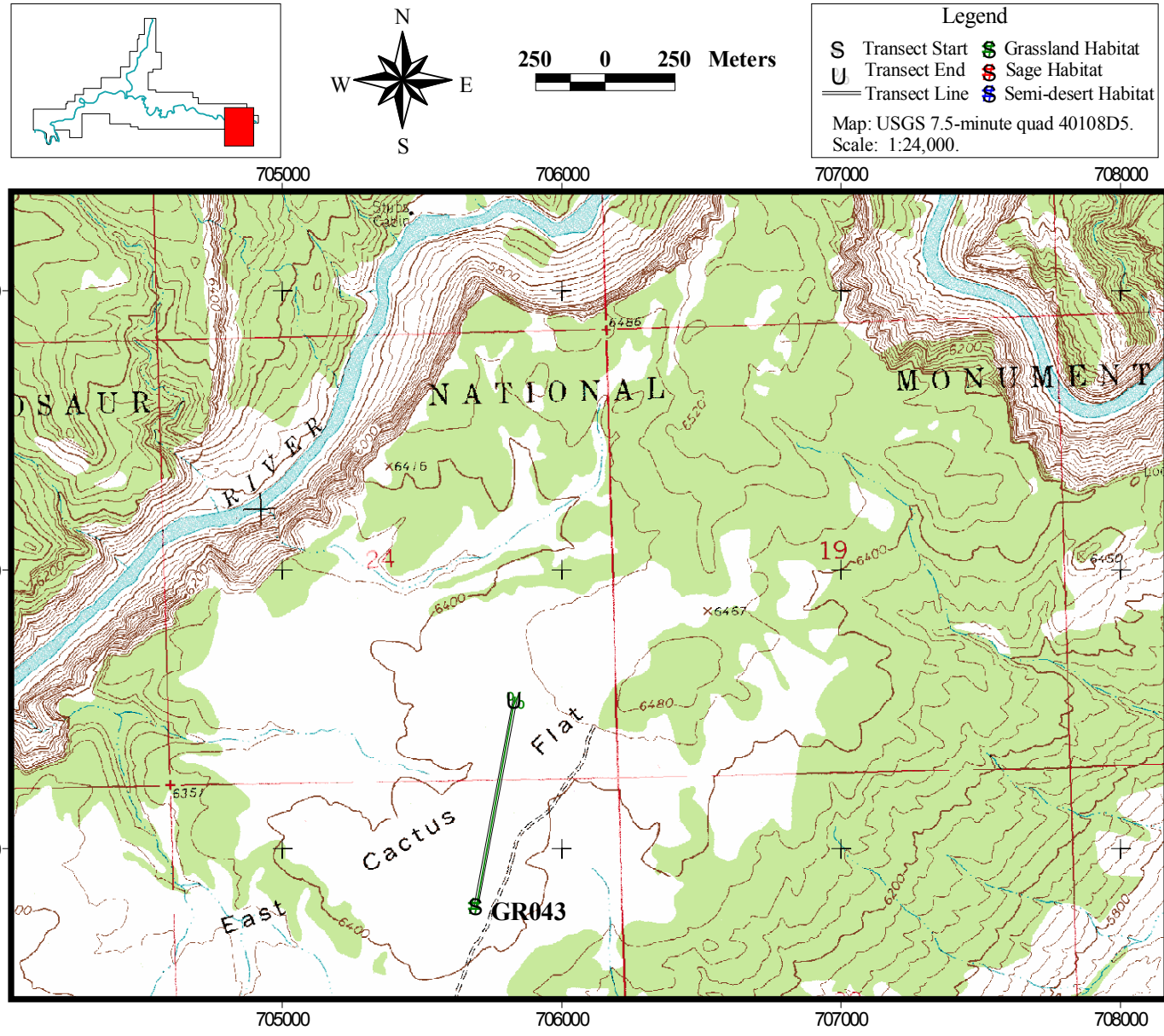
Transect SA041.
Access is in Zenobia Basin. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the park near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Continue past the boundary, and at the intersection at Limestone Draw, turn north (right). Follow the rough road into Zenobia Basin. Park at the gate near the Old Buffam Place. The transect's starting point is at UTM 12T 677631 4496589. The transect runs along a bearing of 210 degrees for 750 meters and ends at UTM 12T 677207 4495946. Use GPS to locate the transect start and end, and to measure straight-line distance.



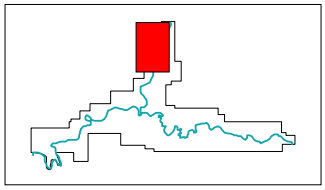
Transect GR042.
Access is in Zenobia Basin. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the Monument near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Continue past the boundary, and at the intersection at Limestone Draw, turn north (right). Follow the rough road into Zenobia Basin. Pass the Old Buffam Place, and drive to a gate where the road comes closest to a large red-rock butte (USGS point 7539). The Transect's starting point is at the gate at UTM 12T 678111 4498264. The transect runs along a bearing of 090 degrees for 750 meters and ends at UTM 12T 678839 4498349. Use GPS to locate the transect start and end, and to measure straight-line distance.



Transect GR043.
Access is from the Bear Valley Road at the Spurgion Cabin. At the Spurgion Cabin, turn north onto a dirt road and drive to the locked gate at the Monument's boundary. From the boundary, continue to walk along the dirt road to reach East Cactus Flat. In East Cactus Flat, walk northeast to the transect's starting point at UTM 12T 705697 4479796. The transect runs along a bearing of 355 degrees for 750 meters and ends at UTM 705830 4480534. Use GPS to locate the transect start and end, and to measure straight-line distance.



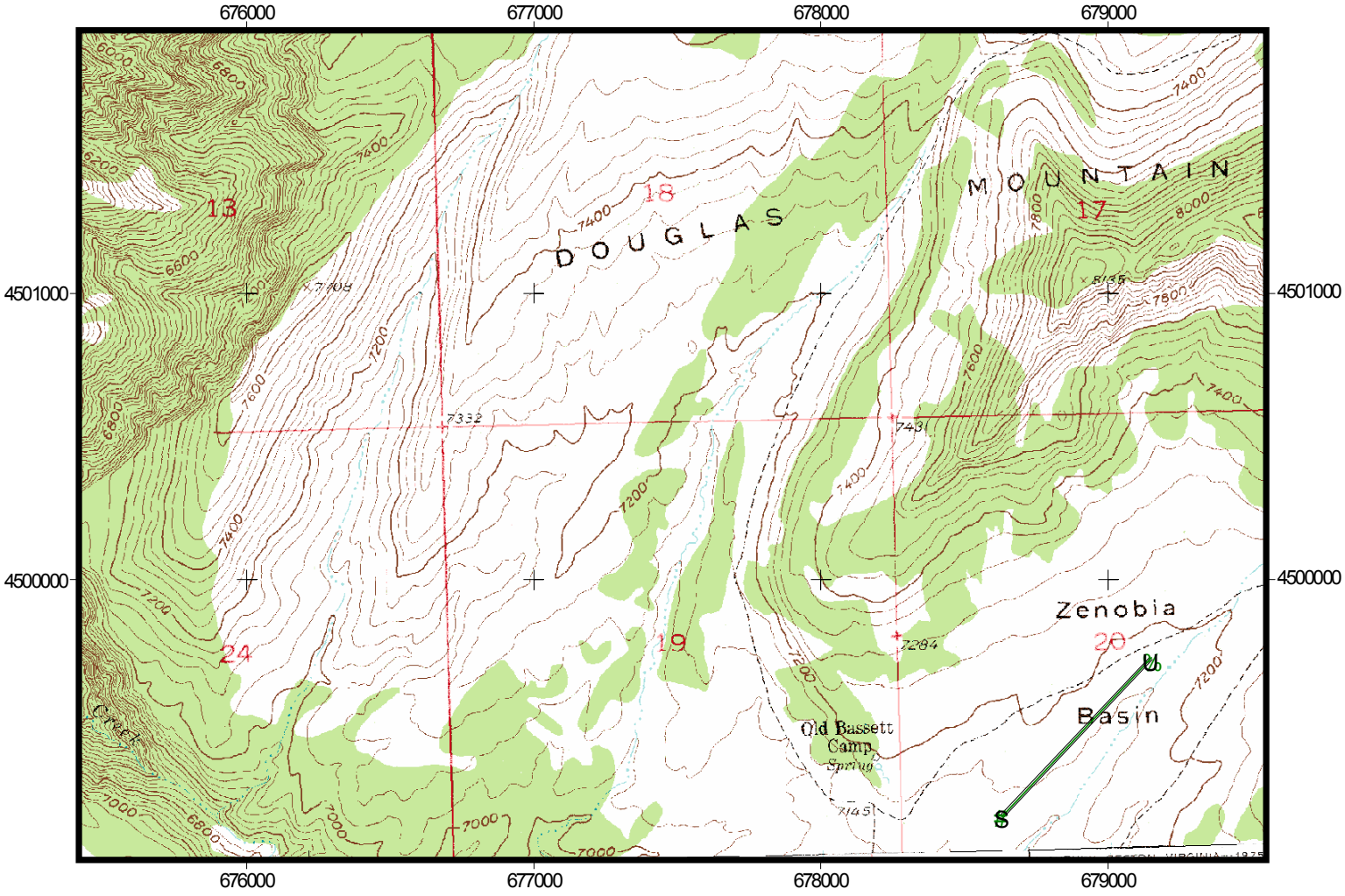
Transect GR044.
Access is in Zenobia Basin. Take the Douglas Mountain Boulevard (116 rd) to within 1/4 mile of entering the Monument near Zenobia Peak. Turn south onto a four wheel drive road heading down Big Joe Draw. Pass Brown's Cabin, and continue west on the road up a steep hill onto Iron Mine Ridge. Follow the road down the hill to the Monument boundary. Continue past the boundary, and at the intersection at Limestone Draw, turn north (right). Follow the rough road into Zenobia Basin. Pass the Old Buffam Place, and drive to a gate where the road comes closest to a large red-rock butte (USGS point 7539). Pass the Butte and drive to a burned area at the Old Bassett Camp and spring. From the camp, walk 300 meters along a bearing of 080 degrees to the transect's starting point at UTM 12T 678635 4499167. The transect runs along a bearing of 030 degrees for 750 meters and ends at UTM 12T 679150 4499714. Use GPS to locate the transect start and end, and to measure straight-line distance.



N
W E
S

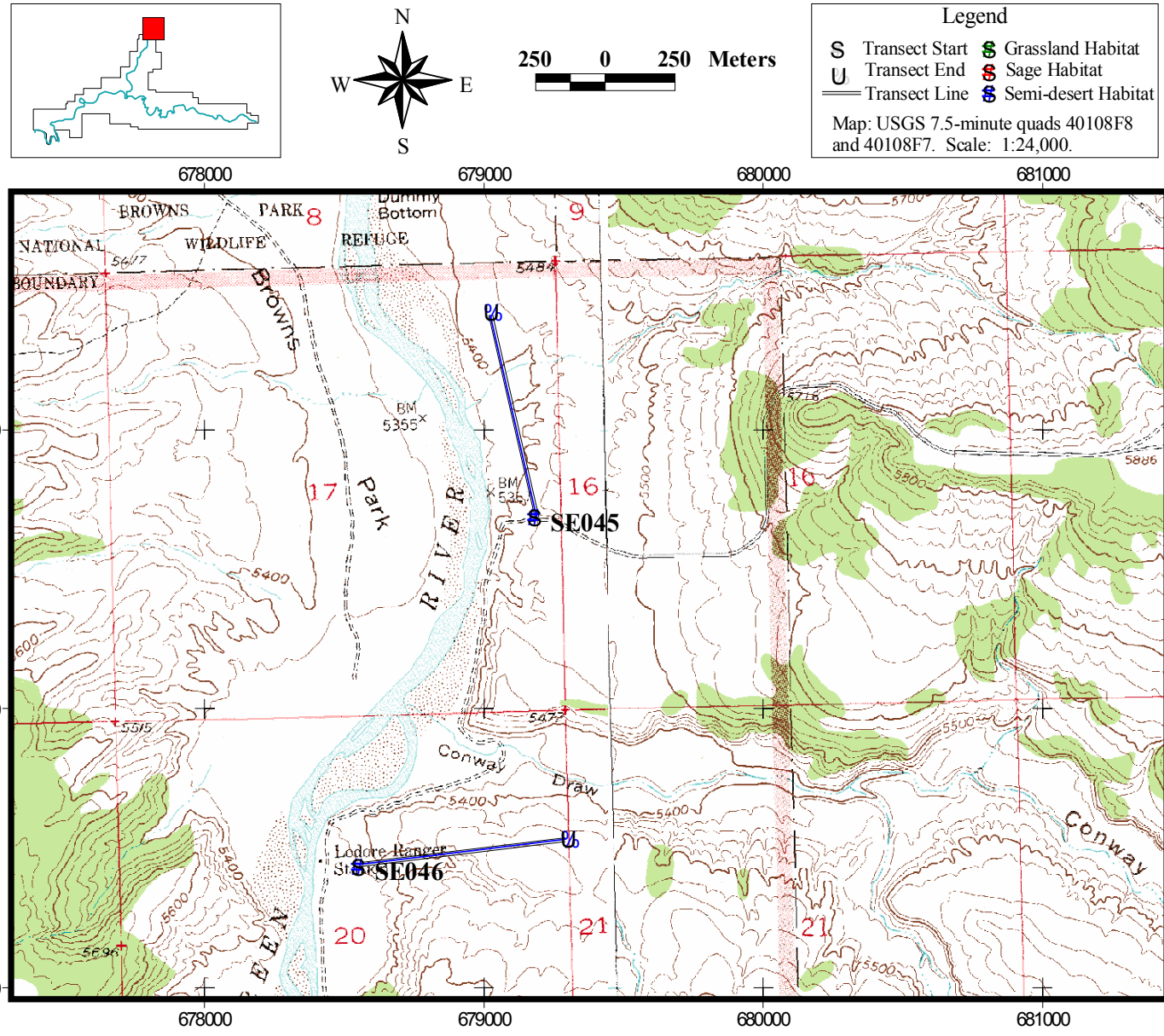
250 0 250 Meters

Legend
S Transect Start
U Transect End
Transect Line
Grassland Habitat
Sage Habitat
Semi-desert Habitat
Map: USGS 7.5-minute quad 40108F8.
Scale: 1:24,000



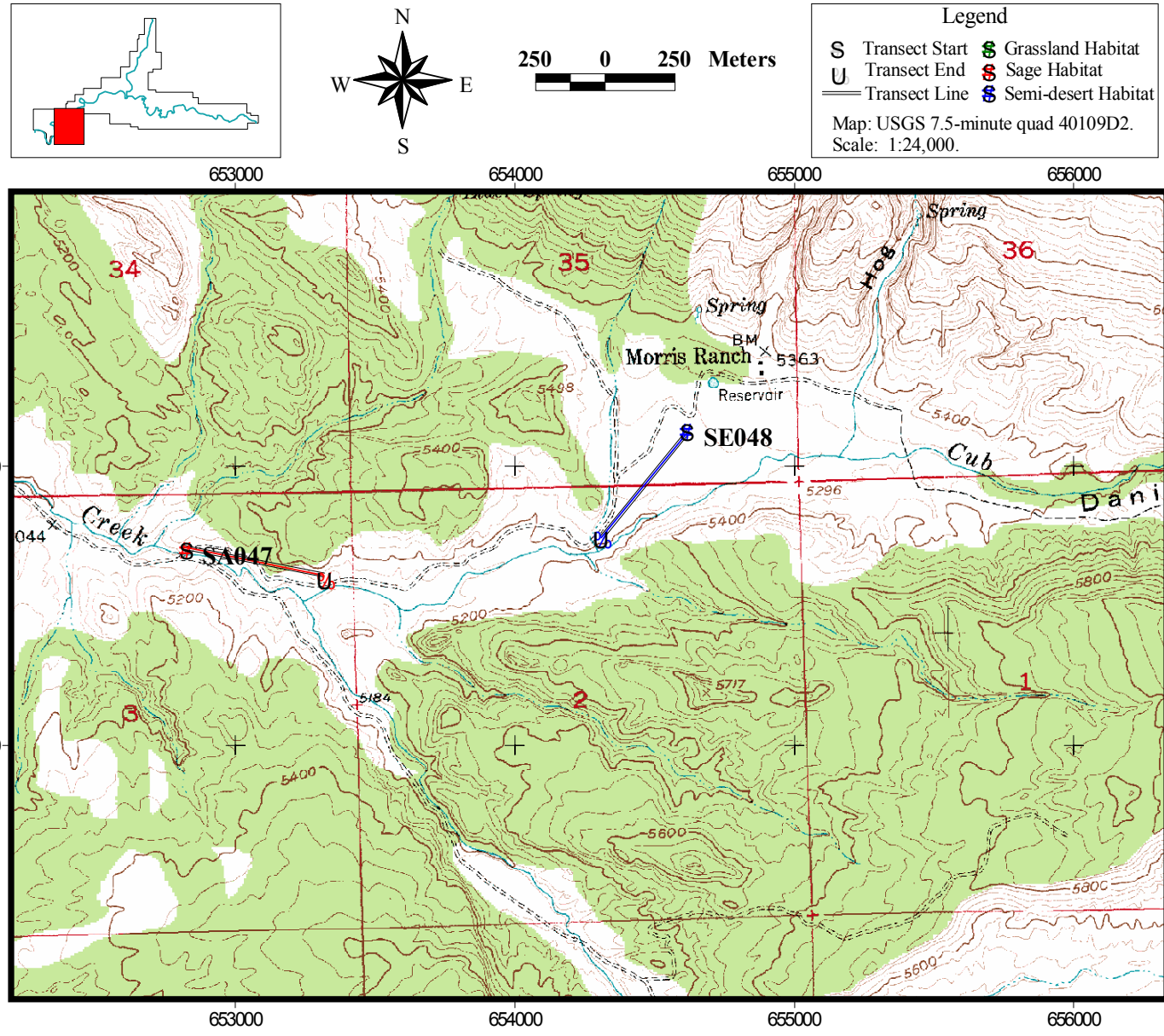
Transect SE045.
Access is at the Gates of Lodore. Take Moffat County 34 Road to the entrance of the Monument. The road makes a sharp turn south and then east as it approaches the river. As the road approaches the river, it turns due south again; park there. The transect's starting point is on the road at UTM 12T 679187 4511687. The transect runs at 340 degrees for 750 meters, and ends at UTM 12T 679029 4512420. Use GPS to locate the transect start and end, and to measure straight-line distance.

Transect SE046.
Access is at the Gates of Lodore. Take Moffat County 34 Road to the Gates of Lodore Ranger Station. From the ranger station, walk 75 meters at 045 degrees to transect start. The transect's starting point is at UTM 12T 678558 4510437. The transect runs at 045 degrees for 750 meters, and ends at UTM 12T 679304 5410533. Use GPS to locate the transect start and end, and to measure straight-line distance.

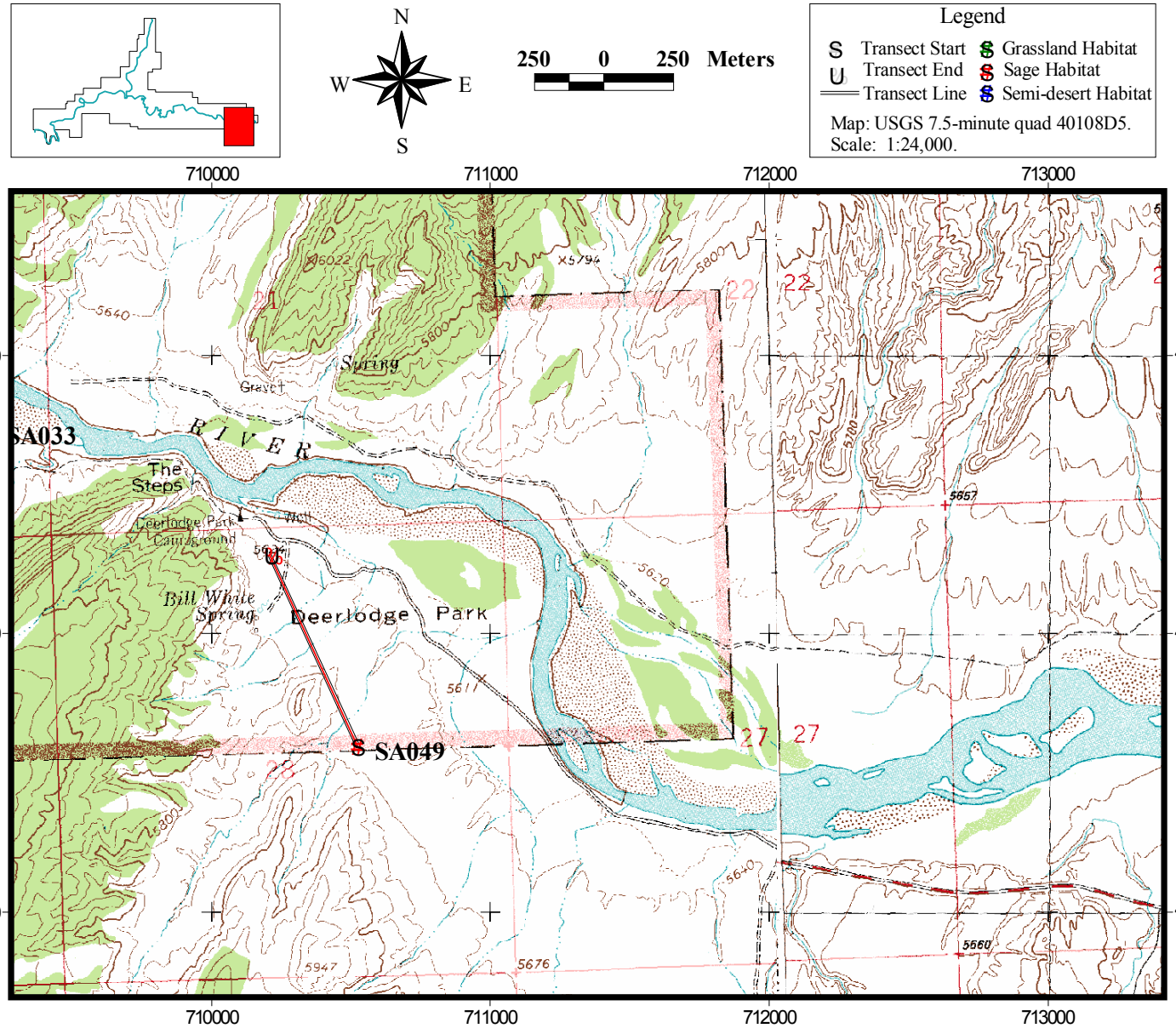


Transect SA047.
Access is from the Blue Mountain Road at its intersection with the Morris Ranch Road. Park at the intersection (where Cub Creek crosses the road). The transect's starting point is on the Morris Ranch Road at UTM 12T 652831 4475698. The transect runs east along the road for 500 meters and ends at UTM 12T 653319 4475589. Use GPS to locate the transect start and end, and to measure straight-line distance.

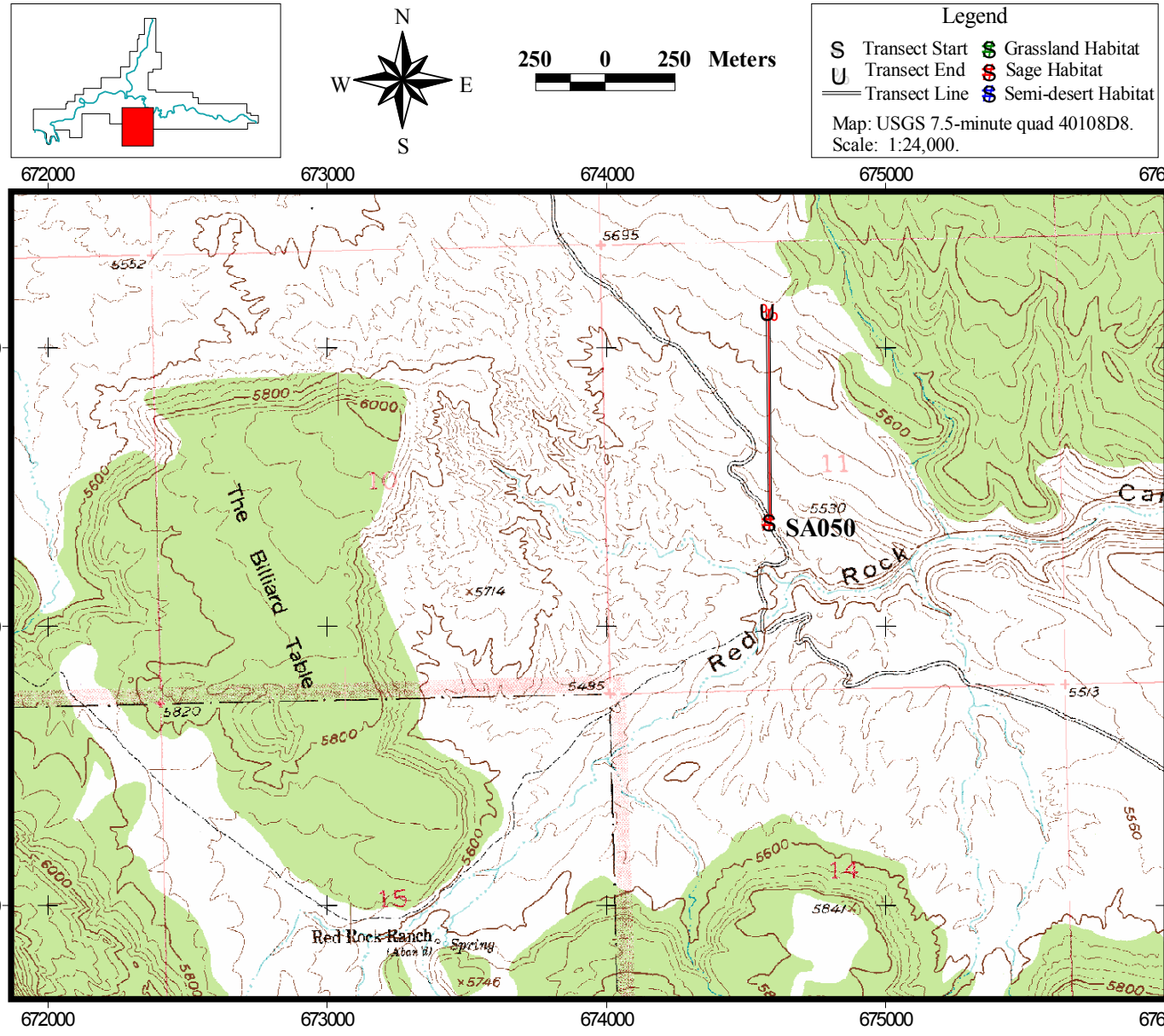
Transect SE048.
Access is from the Morris Ranch Road. Take the Morris Ranch Road east toward the ranch and park at the first cattle guard west of the ranch. The transect's starting point is at the fence 80 meters east of the road at UTM 12T 0654624 4476123. The transect runs along a bearing of 210 degrees for 500 meters and ends at UTM 12T 654310 4475736. Use GPS to locate the transect start and end, and to measure straight-line distance.



Transect SA049.
Access is at Deerlodge Park. Park where the road enters the Monument. The transect's starting point is at the boundary fence 50 meters west of the road at UTM 12T 710534 4479595. The transect runs 750 meters along a bearing of 330 degrees, paralleling the road, and ends at UTM 12T 710217 4480278. Use GPS to locate the transect start and end, and to measure straight-line distance.

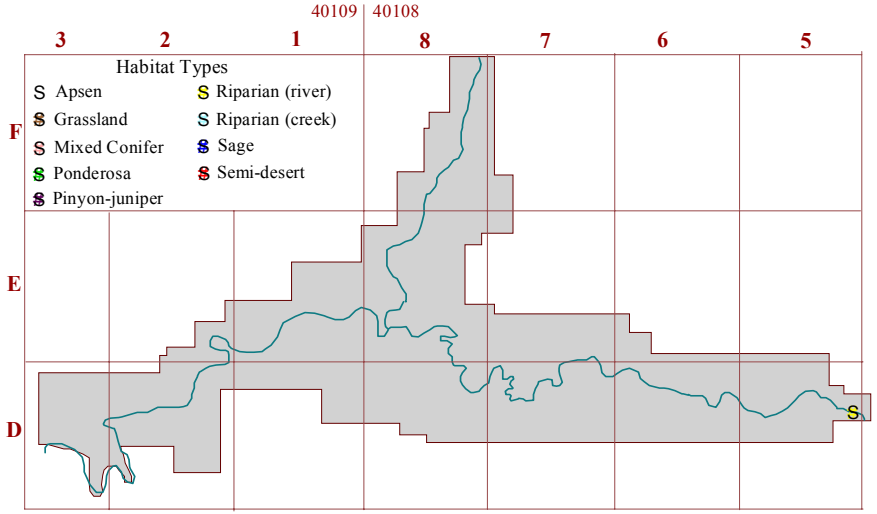


Transect SA050.
Access is from the Mantle Ranch Road near the Billiard Table. The transect's starting point is at UTM 12T 674589 4483375. The transect runs along a bearing of 355 degrees for 750 meters and ends at UTM 12T 674578 4484126. Use GPS to locate the transect start and end, and to measure straight-line distance.

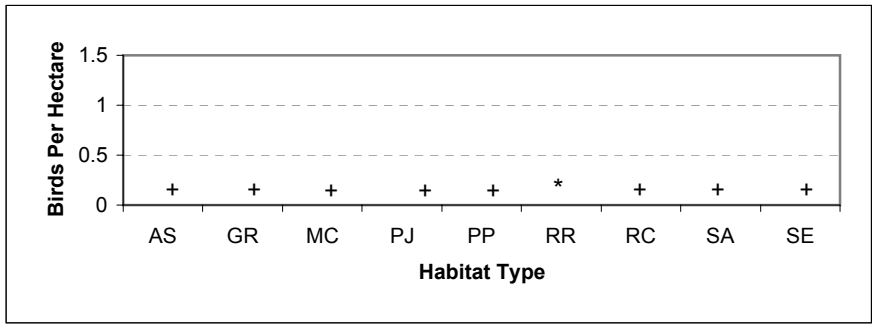


Appendix B. Species Distribution and Abundance

Western Grebe -- Western Grebe was detected only in Riparian (river) habitat (n = 1), near Deerlodge park.

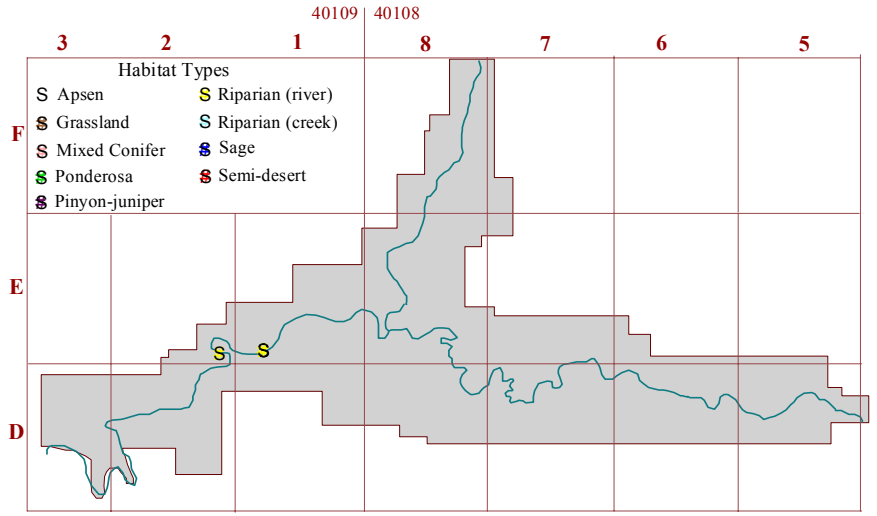


Distribution of Western Grebe observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

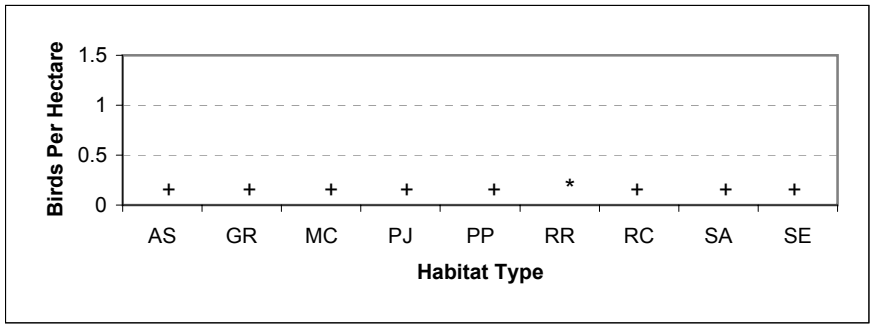


Density of Western Grebe amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Western Grebe were insufficient (<20) to calculate density in this habitat type. + Western Grebe was not detected in this habitat type.

Great-blue Heron -- Great-blue Heron was detected only in Riparian (river) habitat (n = 4).

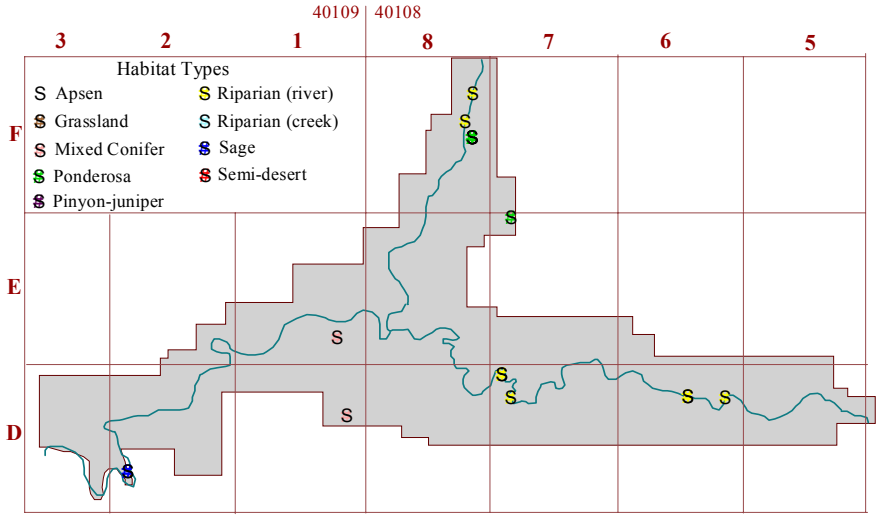


Distribution of Great-blue Heron observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

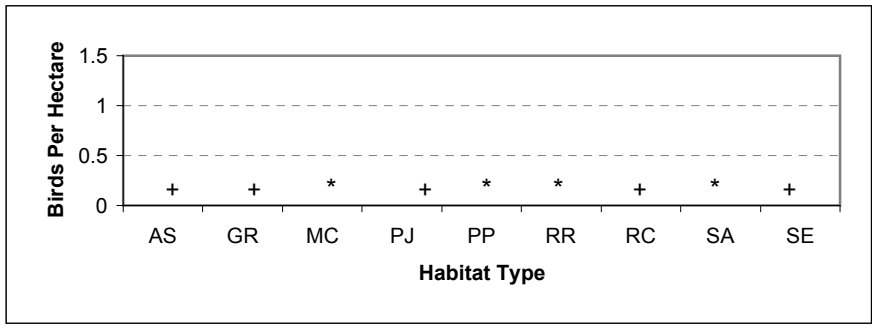


Density of Great-blue Heron amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Great-blue Heron were insufficient (<20) to calculate density in this habitat type. + Great-blue Heron was not detected in this habitat type.

Turkey Vulture -- Turkey Vultures were detected in low numbers in Mixed Conifer (n = 2), Ponderosa Pine (n = 7), Riparian (river) (n = 8), and Sage (n = 2) habitats.

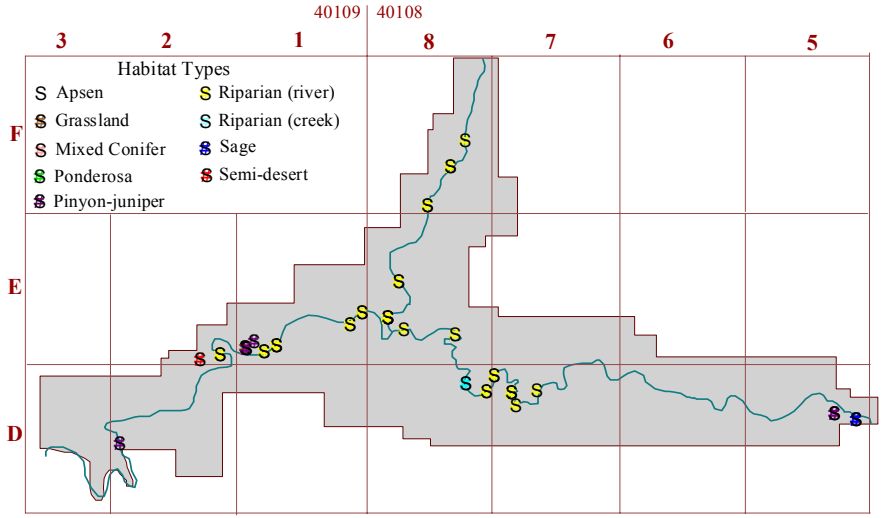


Distribution of Turkey Vulture observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

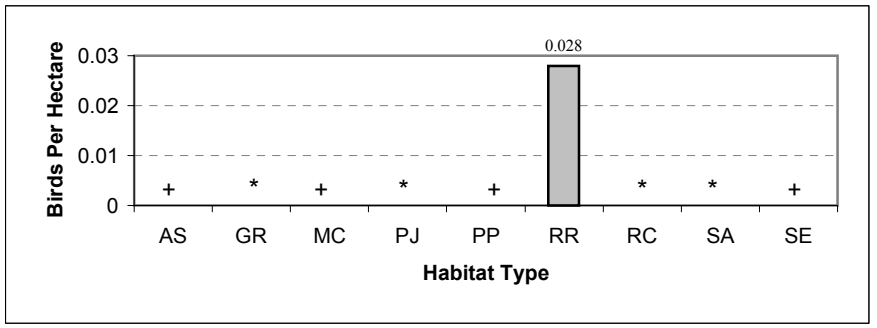


Density of Turkey Vulture amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Turkey Vulture were insufficient (<20) to calculate density in this habitat type. + Turkey Vulture was not detected in this habitat type.

Canada Goose -- Detections of Canada Goose were sufficient to calculate density only in Riparian (river) habitat (D = 0.028 birds per hectare). Canada Goose was detected in low numbers in Grassland (n = 2), Pinyon-juniper (n = 6) Riparian (creek) (n = 2), and Sage (n = 2) habitats.

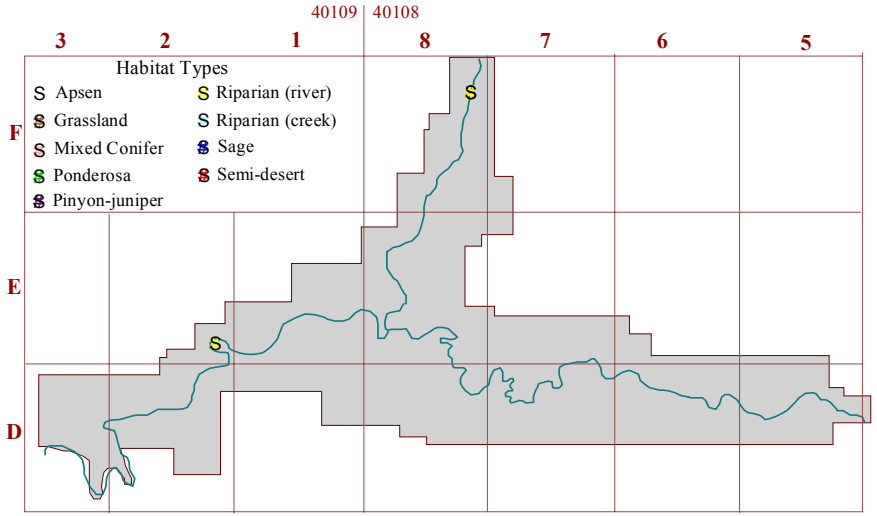


Distribution of Canada Goose observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

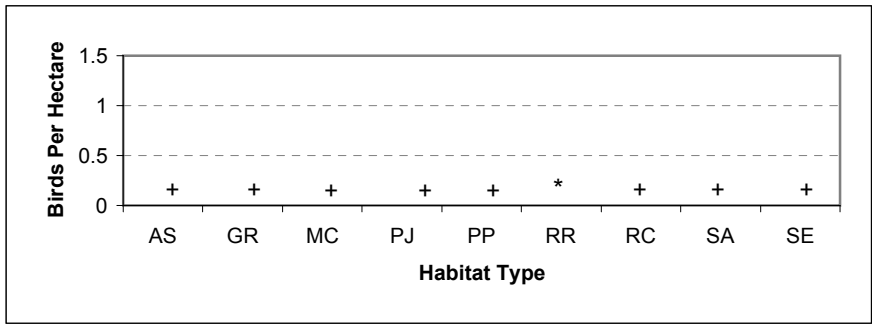


Density of Canada Goose amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Canada Goose were insufficient (<20) to calculate density in this habitat type. + Canada Goose was not detected in this habitat type.

Gadwall -- Gadwall was detected only in Riparian (river) habitat (n = 3).

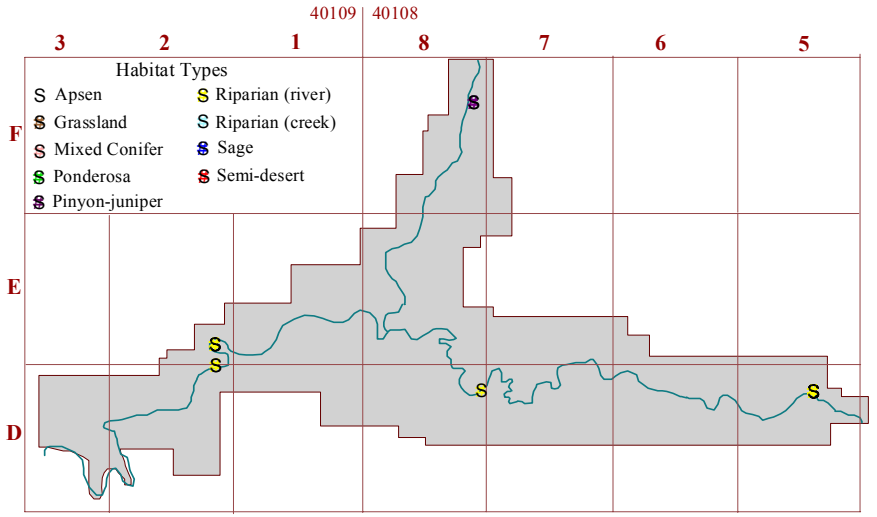


Distribution of Gadwall observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

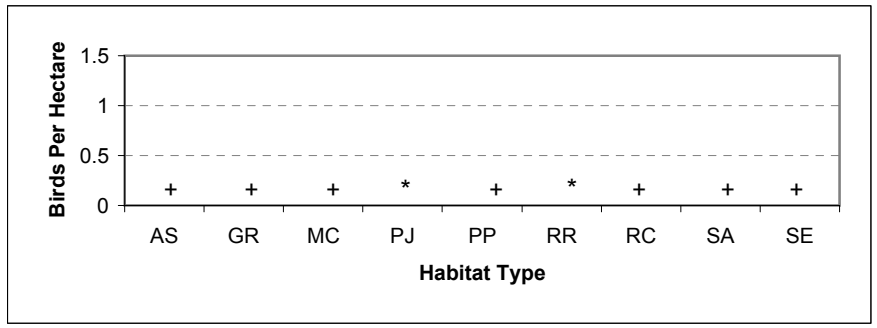


Density of Gadwall amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Gadwall were insufficient (<20) to calculate density in this habitat type. + Gadwall was not detected in this habitat type.

Mallard -- Mallard was detected in low numbers in Pinyon-juniper (n = 4) and Riparian (river) (n = 19) habitats. Detections in Pinyon-juniper habitat were in areas near the Green River.

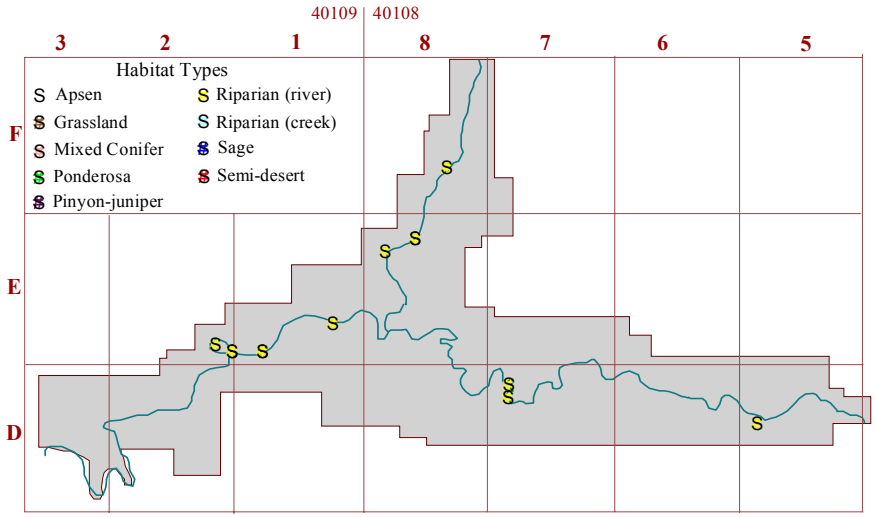


Distribution of Mallard observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

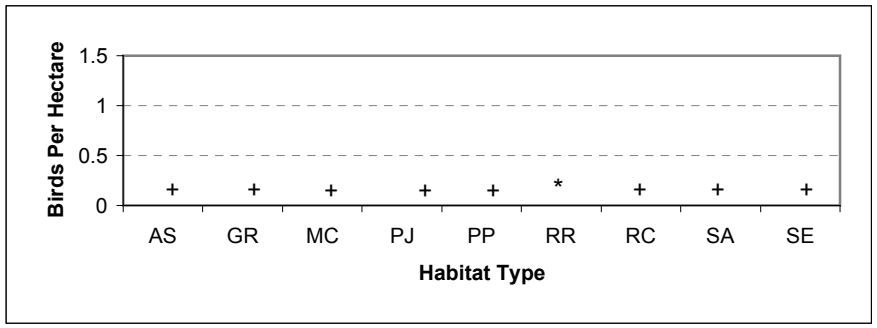


Density of Mallard amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa;
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Mallard were insufficient (<20) to calculate density in this habitat type. + Mallard was not detected in this habitat type.

Common Merganser -- Common Merganser was detected only in Riparian (river) (n = 13) habitat.

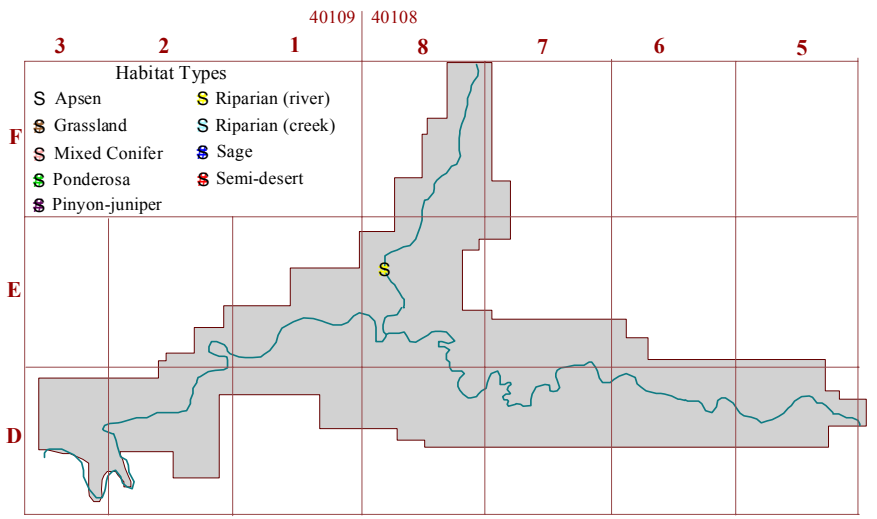


Distribution of Common Merganser observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

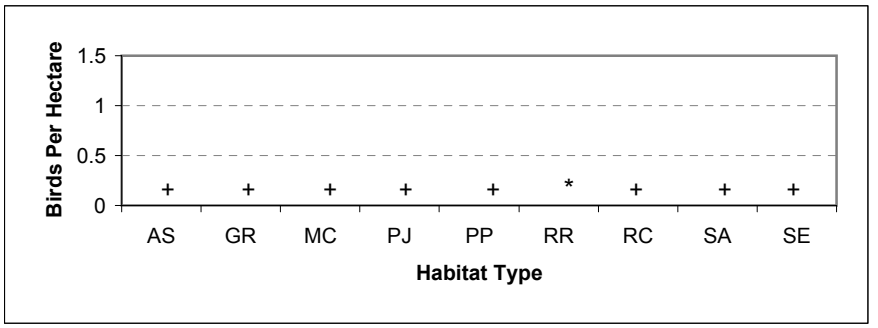


Density of Common Merganser amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Common Merganser were insufficient (<20) to calculate density in this habitat type. + Common Merganser was not detected in this habitat type.

Osprey -- Osprey was detected only in Riparian (river) habitat (n = 1), in the Canyon of Lodore.

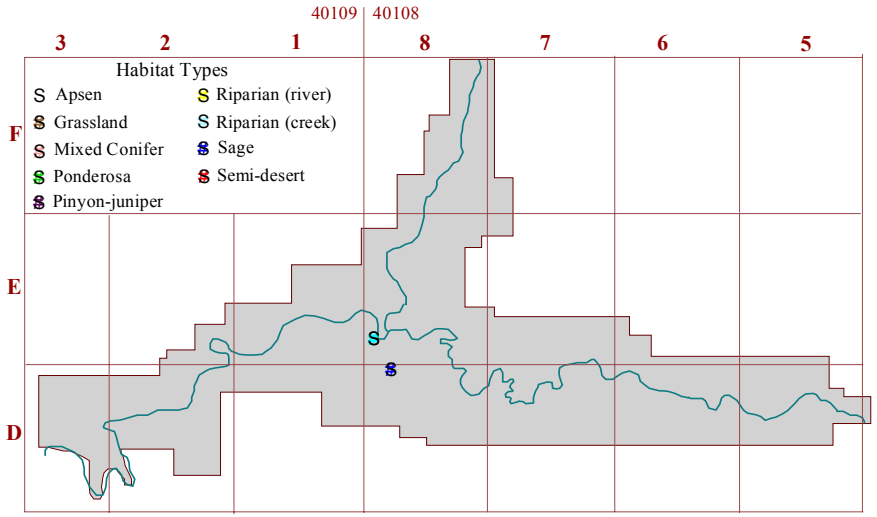


Distribution of Osprey observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

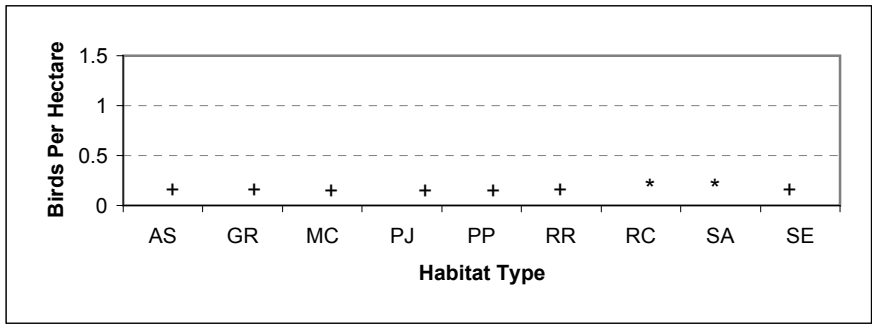


Density of Osprey amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Osprey were insufficient (<20) to calculate density in this habitat type. + Osprey was not detected in this habitat type.

Northern Harrier -- Northern Harrier was detected in low numbers in Riparian (creek) (n = 2) and Sage (n = 1) habitats.

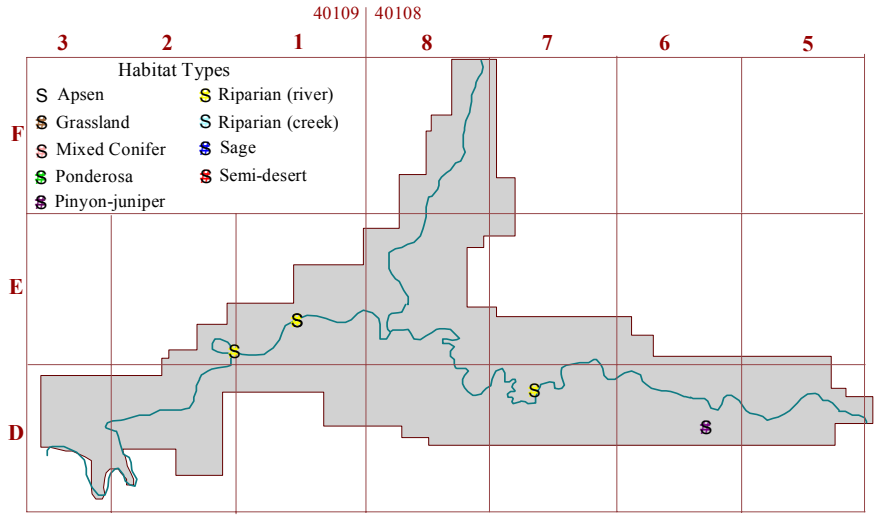


Distribution of Northern Harrier observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

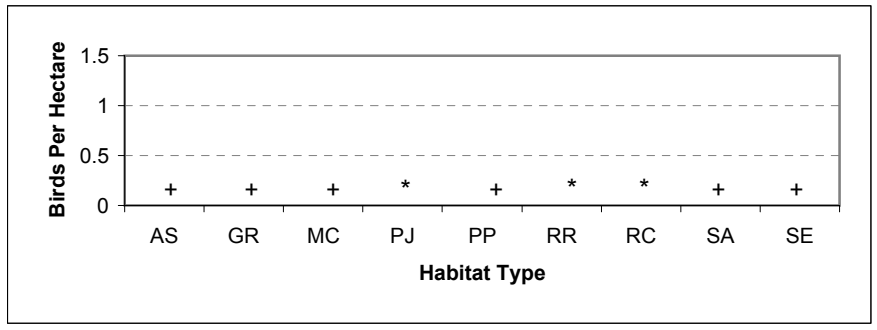


Density of Northern Harrier amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Northern Harrier were insufficient (<20) to calculate density in this habitat type. + Horthern Harrier was not detected in this habitat type.

Cooper's hawk -- Cooper's Hawk was detected in low numbers in Pinyon-juniper (n = 1), Riparian (river) (n = 4), and Riparian (creek) (n = 2) habitats.

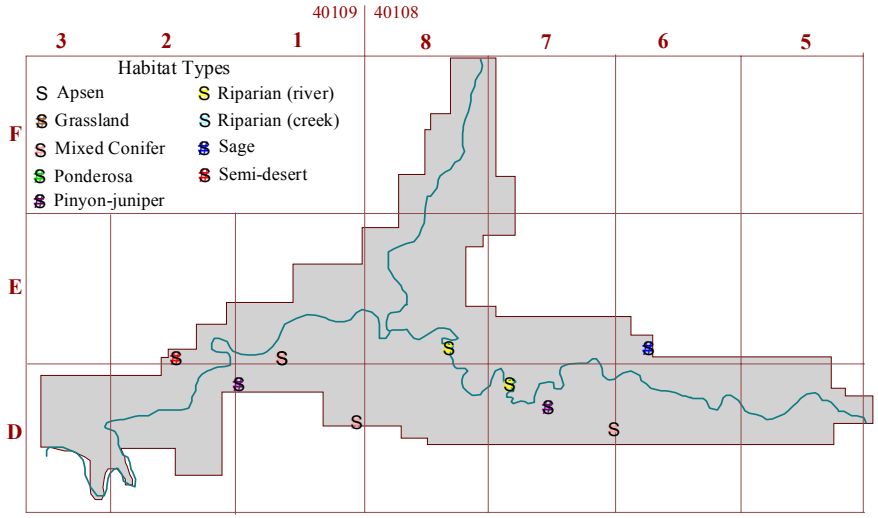


Distribution of Cooper's Hawk observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

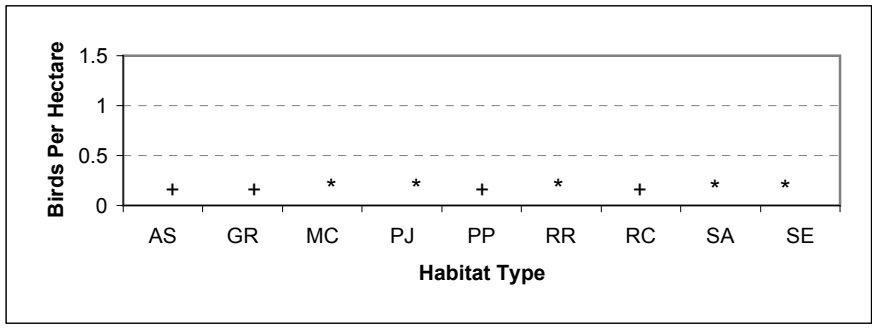


Density of Cooper's Hawk amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Cooper's Hawk were insufficient (<20) to calculate density in this habitat type. + Cooper's Hawk was not detected in this habitat type.

Red-tailed Hawk -- Red-tailed Hawk was detected in low numbers in Mixed Conifer (n = 4), Pinyon-juniper (n = 2), Riparian (river) (n = 2), Sage (n = 1), and Semi-desert (n = 1) habitats.

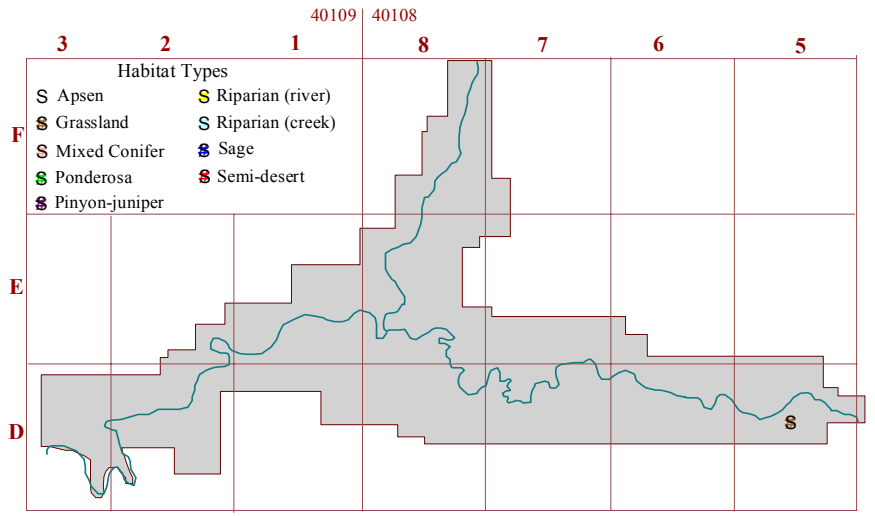


Distribution of Red-tailed Hawk observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

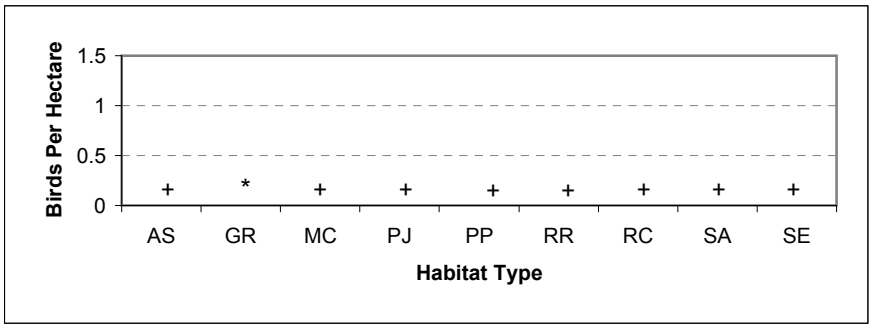


Density of Red-tailed Hawk amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Red-tailed Hawk were insufficient (<20) to calculate density in this habitat type. + Red-tailed Hawk was not detected in this habitat type.

Ferruginous Hawk -- Ferruginous Hawk was detected only in Grassland habitat (n = 1).

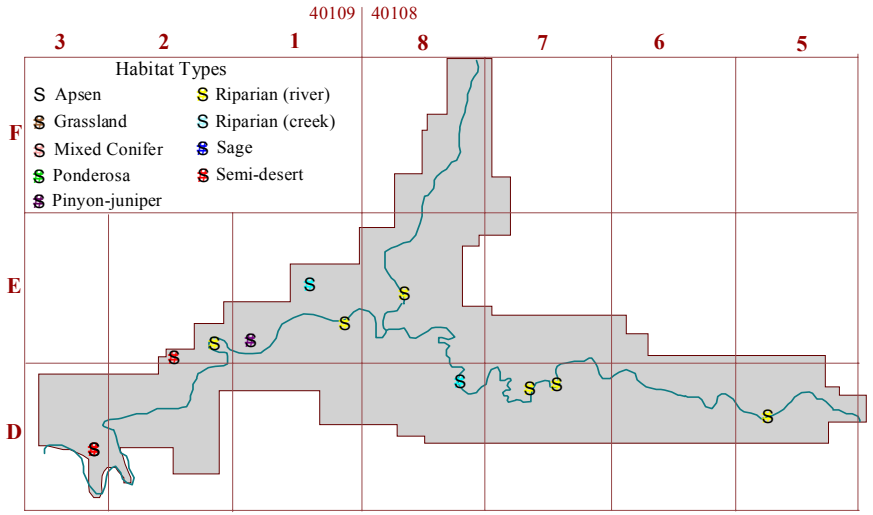


Distribution of Ferruginous Hawk observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

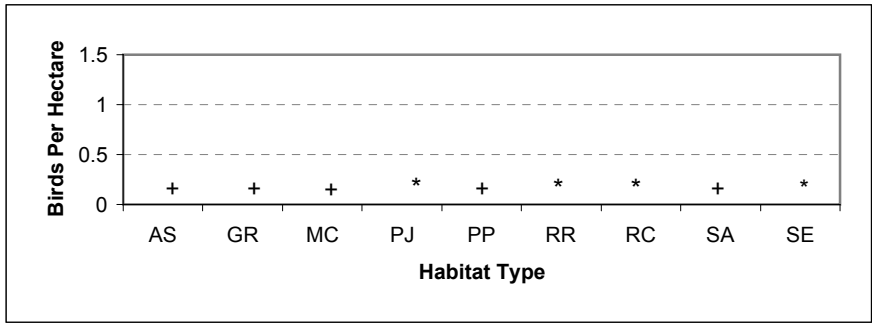


Density of Ferruginous Hawk amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Ferruginous Hawk were insufficient (<20) to calculate density in this habitat type. + Ferruginous Hawk was not detected in this habitat type.

Golden Eagle -- Gloden Eagle was detected in low numbers in Pinyon-juniper (n = 1), Riparian (river) (n = 6), Riparian (creek) (n = 2), and Semi-desert (n = 3) habitats.

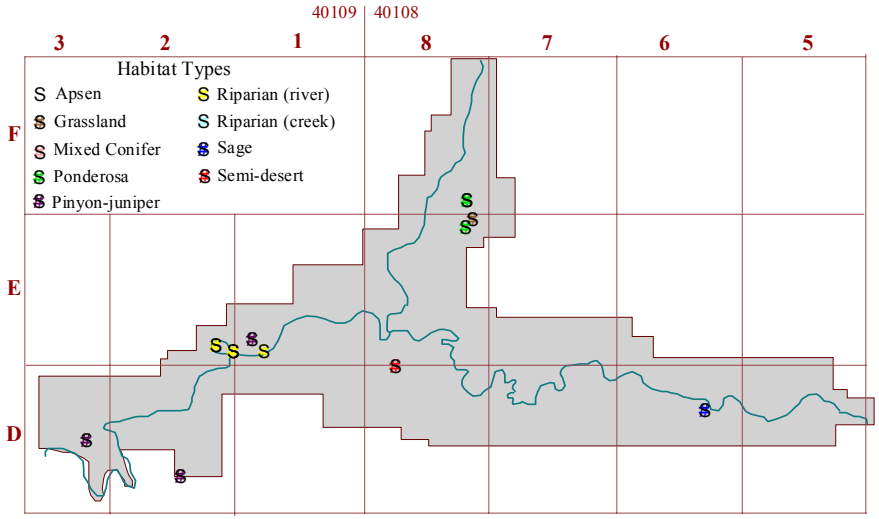


Distribution of Golden Eagle observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

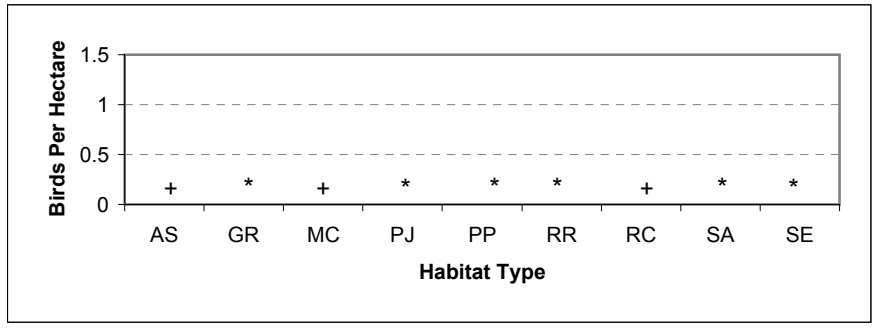


Density of Golden Eagle amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Golden Eagle were insufficient (<20) to calculate density in this habitat type. + Golden Eagle was not detected in this habitat type.

American Kestrel -- American Kestrel was detected in low numbers in Grassland (n = 1), Pinyon-juniper (n = 3), Ponderosa Pine (n = 3), Riparian (river) (n = 6), Sage (n = 1), and Semi-desert (n = 1) habitats.

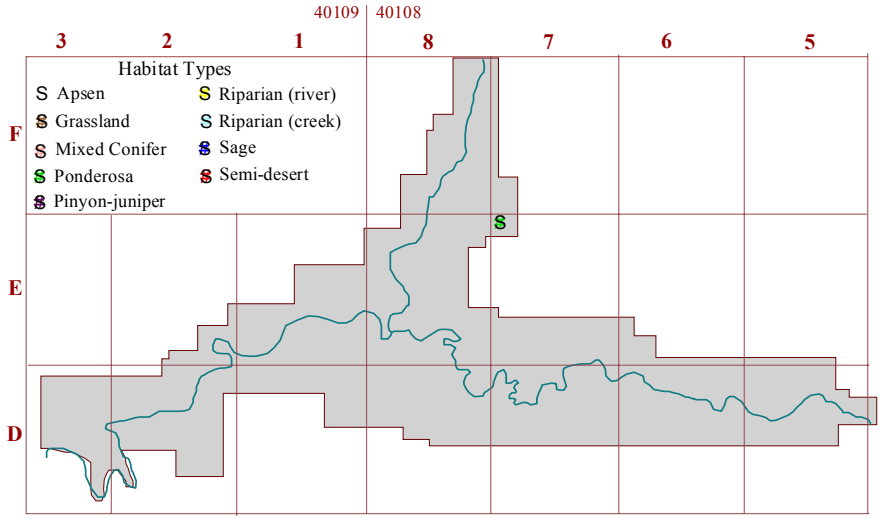


Distribution of American Kestrel observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

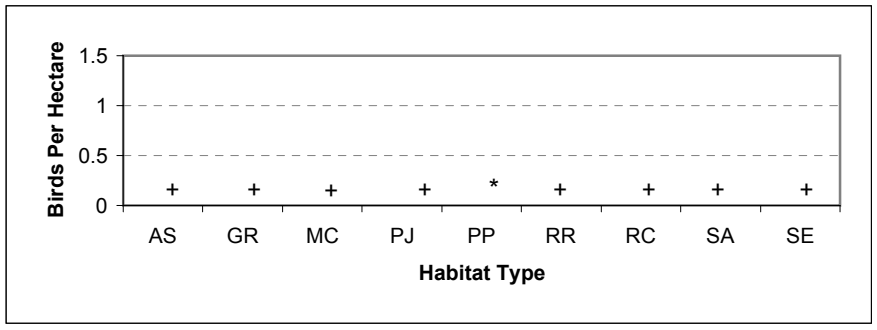


Density of American Kestrel amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of American Kestrel were insufficient (<20) to calculate density in this habitat type. + American Kestrel was not detected in this habitat type.

Prairie Falcon -- Prairie Falcon (n = 1) was detected only in Ponderosa Pine habitat.

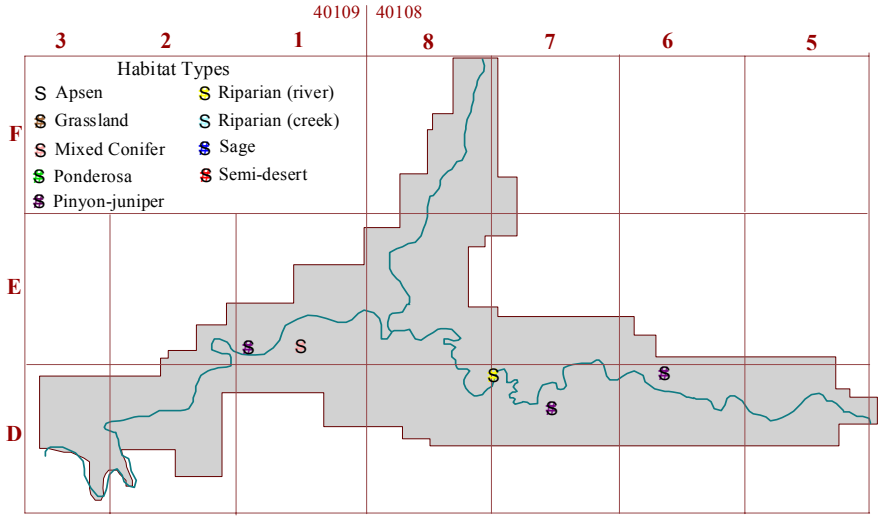


Distribution of Prairie Falcon observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

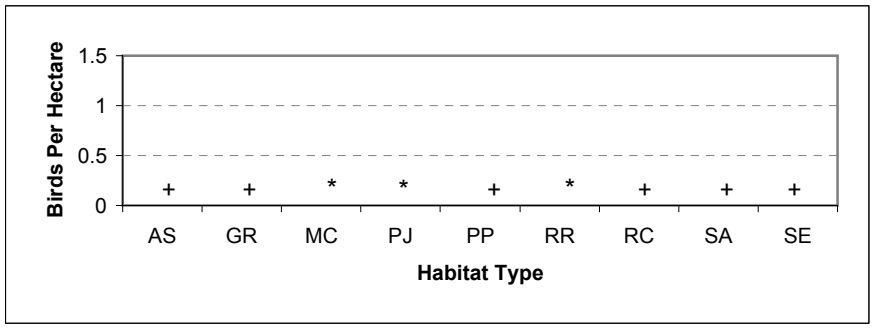


Density of Prairie Falcon amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Prairie Falcon were insufficient (<20) to calculate density in this habitat type. + Prairie Falcon was not detected in this habitat type.

Peregrine Falcon -- Peregrine Falcon was detected in low numbers in Mixed Conifer (n = 1), Pinyon-juniper (n = 3), and Riparian (river) (n = 1) habitats

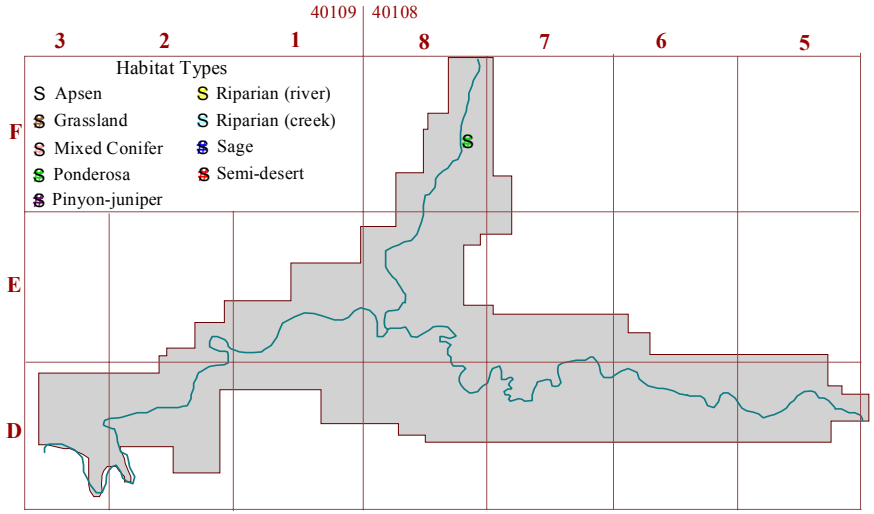


Distribution of Peregrine Falcon observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

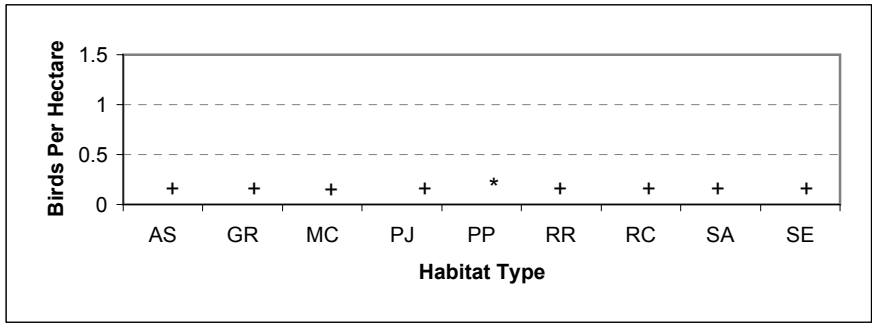


Density of Peregrine Falcon amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Peregrine Falcon were insufficient (<20) to calculate density in this habitat type. + Peregrine Falcon was not detected in this habitat type.

Chuckar -- Chuckar (n = 1) was detected only in Ponderosa Pine habitat.

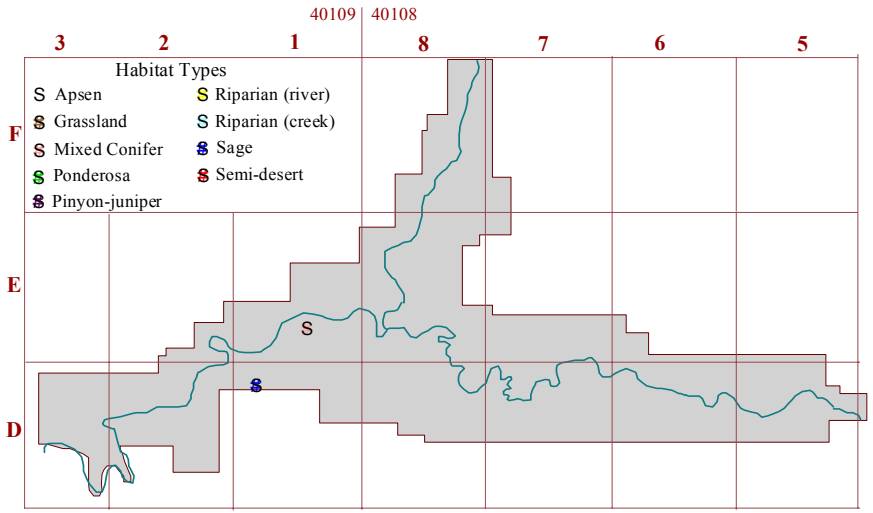


Distribution of Chuckar observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

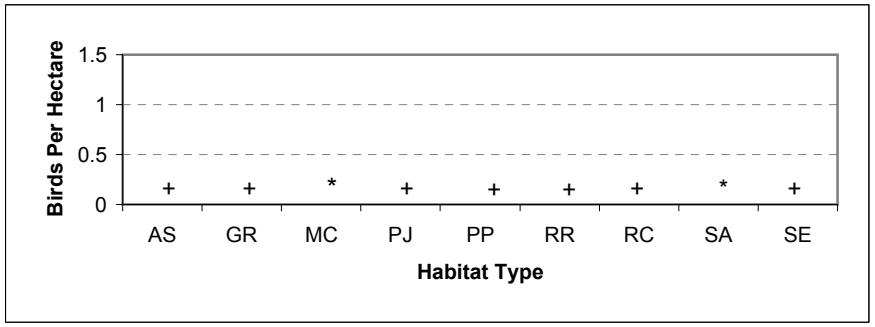


Density of Chuckar amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Chuckar were insufficient (<20) to calculate density in this habitat type. + Chuckar was not detected in this habitat type.

Sage Grouse -- Sage Grouse was detected in low numbers in Mixed Conifer (n = 1), and Sage (n = 1) habitats.

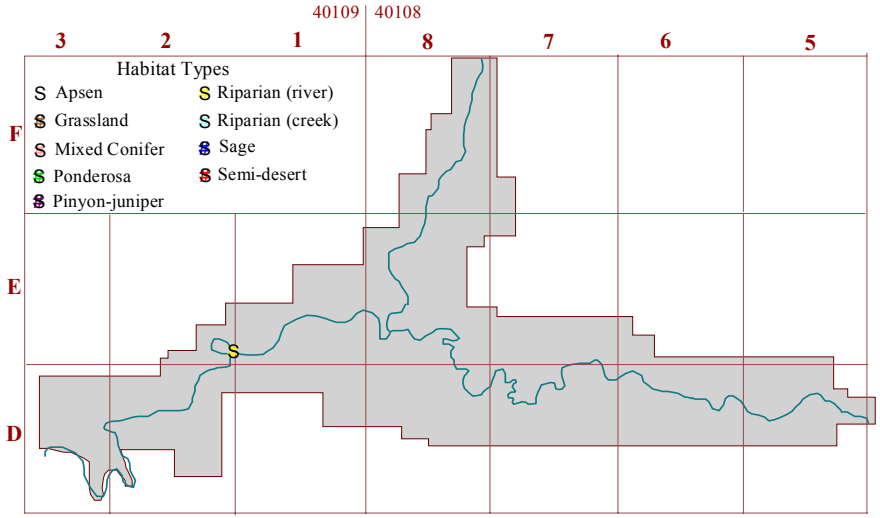


Distribution of Sage Grouse observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

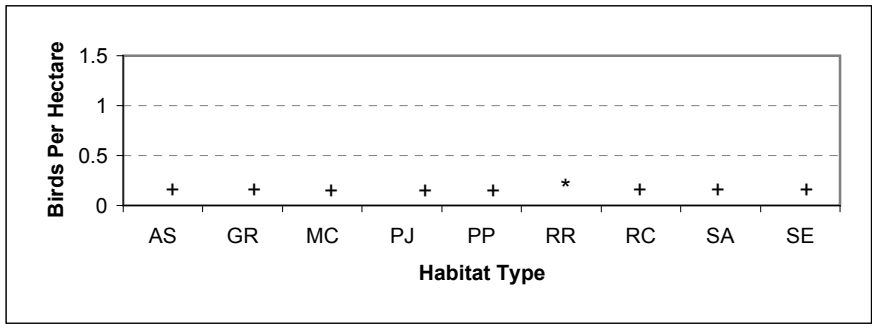


Density of Sage Grouse amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa;
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Sage Grouse were insufficient (<20) to calculate density in this habitat type. + Sage Grouse was not detected in this habitat type.

Killdeer -- Killdeer (n = 1) was detected only in Riparian (river) habitat.

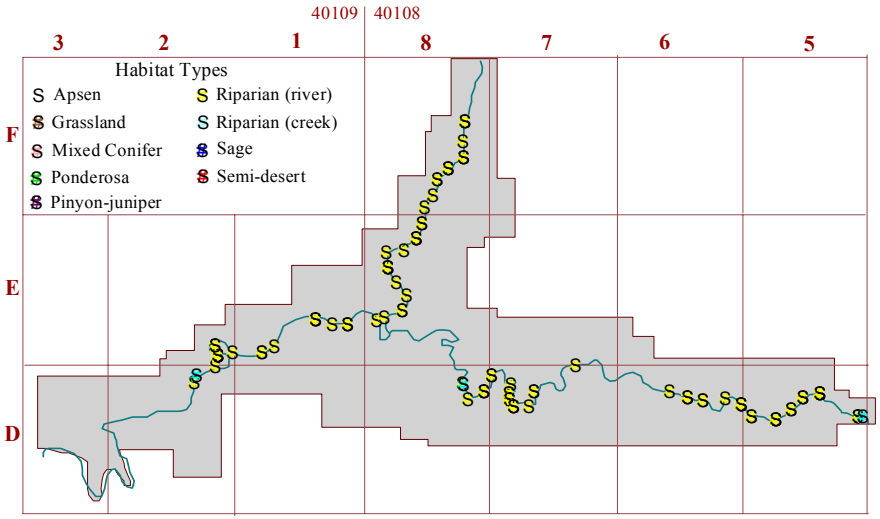


Distribution of Killdeer observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

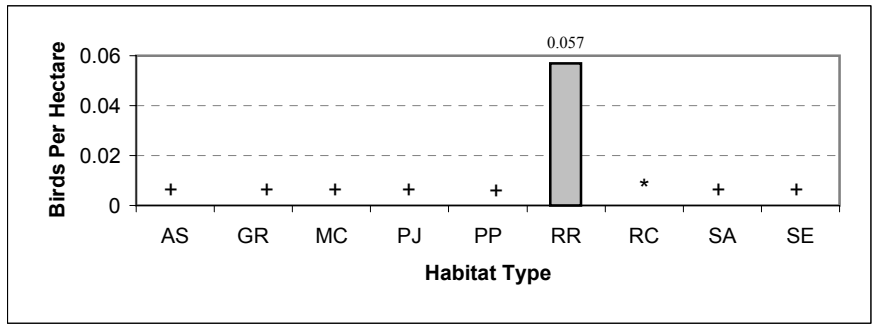


Density of Killdeer amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Killdeer were insufficient (<20) to calculate density in this habitat type. + Killdeer was not detected in this habitat type.

Spotted Sandpiper -- Detections of Spotted Sandpiper were sufficient to calculate density only in Riparian (river) habitat (D = 0.057 birds per hectare). Spotted Sandpiper was detected in low numbers in Riparian (creek) habitat (n = 3).

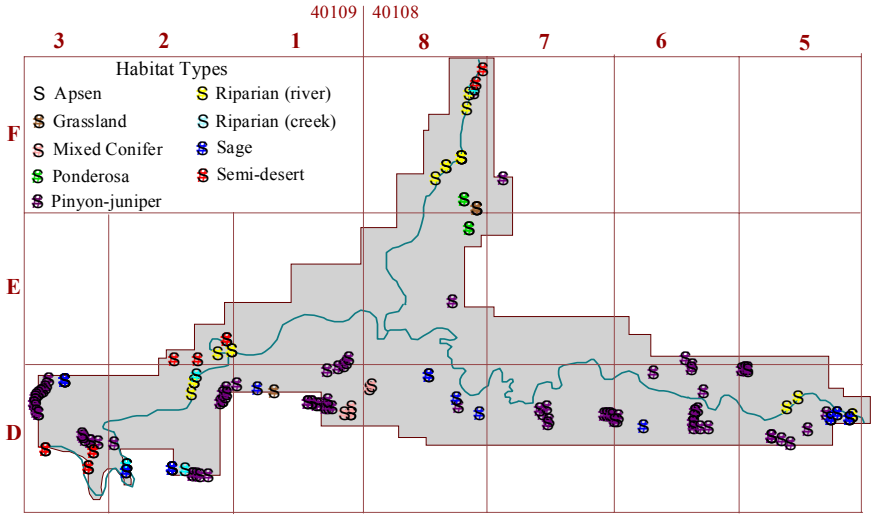


Distribution of Spotted Sandpiper observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

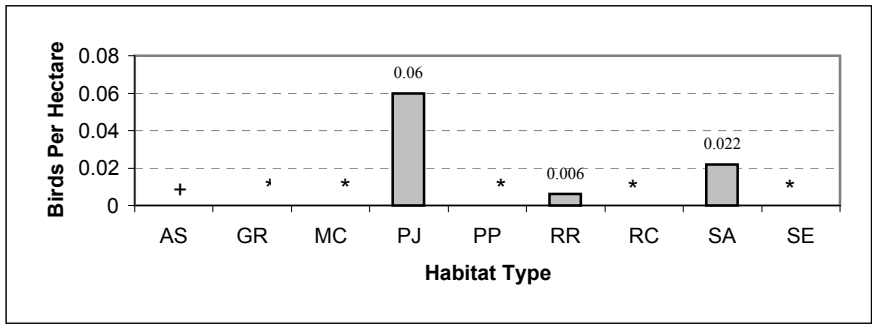


Density of Spotted Sandpiper amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa;
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Spotted Sandpiper were insufficient (<20) to calculate density in this habitat type. + Spotted Sandpiper was not detected in this habitat type.

Mourning Dove -- Detections of Mourning Dove were sufficient to calculate densities in Pinyon-juniper (D = 0.060 birds per hectare), Riparian (river) (D = 0.006 birds per hectare), and Sage (D = 0.022 birds per hectare). Mourning Dove was detected in low numbers in Grassland (n = 5), Mixed Conifer (n = 6), Ponderosa Pine (n = 4), Riaprian (creek) (n = 8), and Semi-desert (n = 12) habitats.

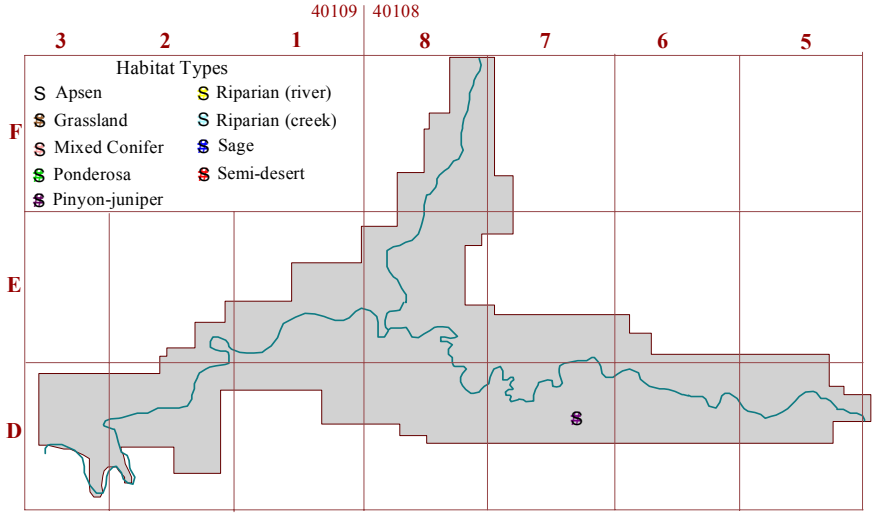


Distribution of Mourning Dove observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

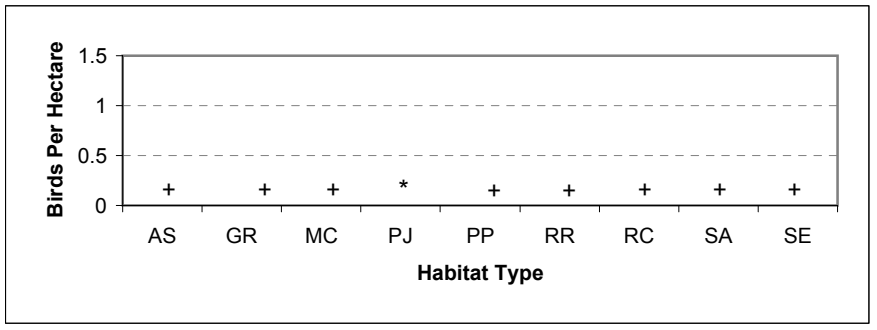


Density of Mourning Dove amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Mourning Dove were insufficient (<20) to calculate density in this habitat type. + Mourning Dove was not detected in this habitat type.

Great Horned Owl -- Great Horned Owl was detected only in Pinyon-juniper habitat (n = 1).

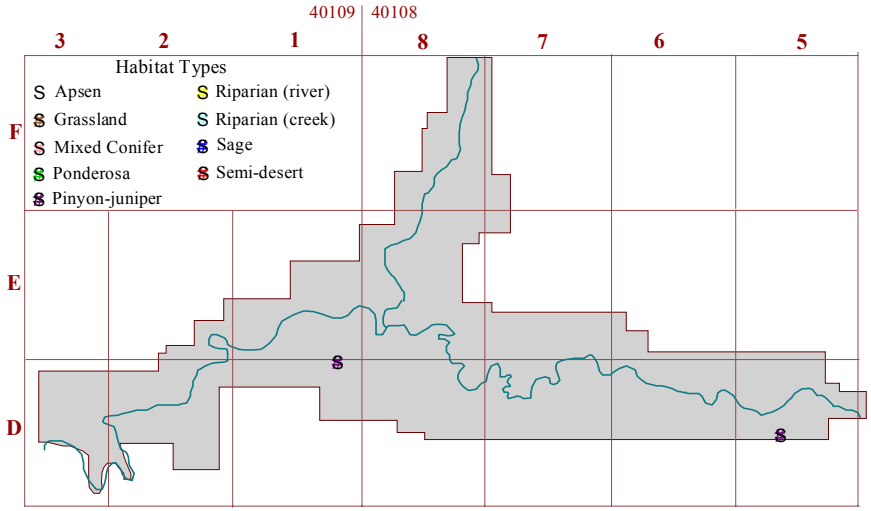


Distribution of Great Horned Owl observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

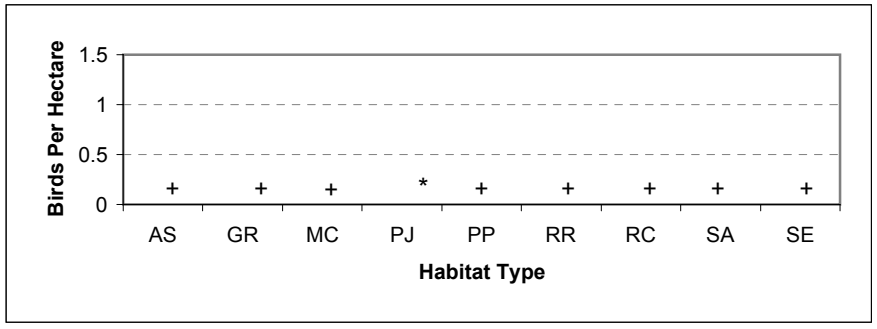


Density of Great Horned Owl amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Great Horned Owl were insufficient (<20) to calculate density in this habitat type. + Great Horned Owl was not detected in this habitat type.

Northern Pygmy-Owl -- Northern Pygmy-Owl was detected only in Pinyon-juniper habitat (n = 2).

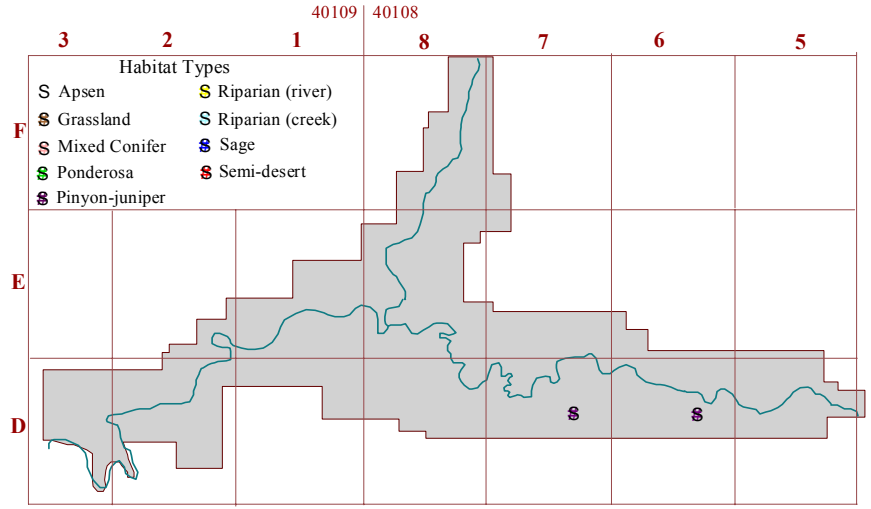


Distribution of Northern Pygmy-Owl observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

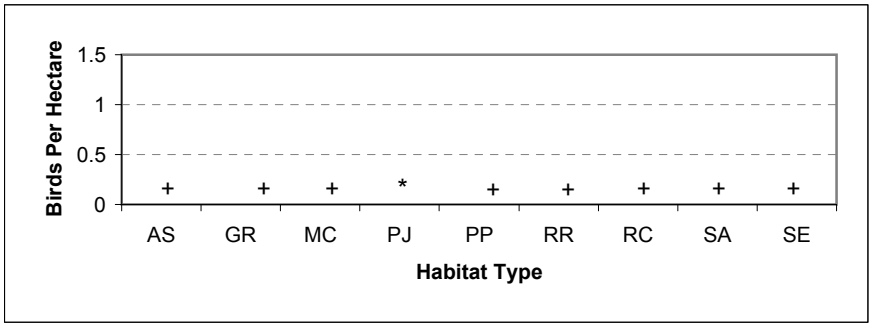


Density of Northern Pygmy-Owl amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Northern Pygmy-Owl were insufficient (<20) to calculate density in this habitat type. + Northern Pygmy-Owl was not detected in this habitat type.

Long-eared Owl -- Long-eared Owl was detected only in Pinyon-juniper habitat (n = 2).

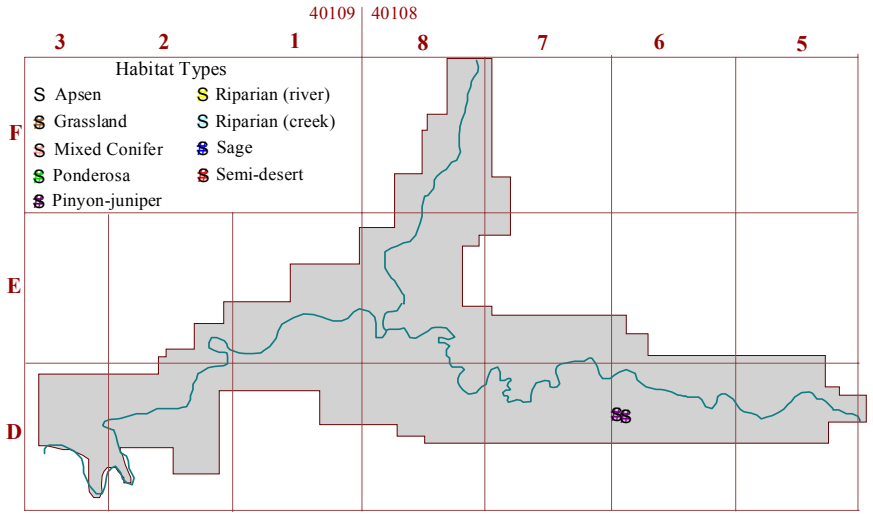


Distribution of Long-eared Owl observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

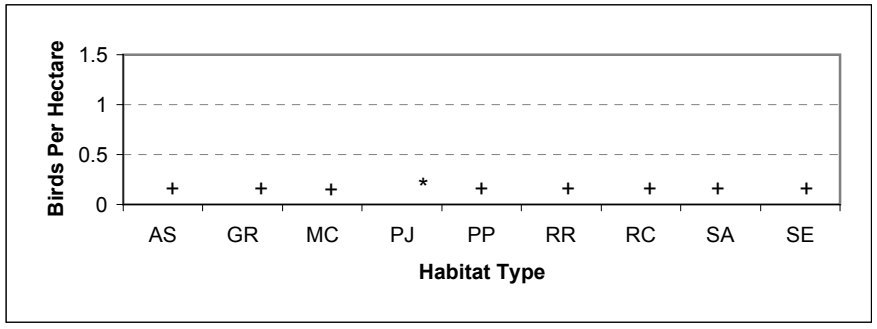


Density of Long-eared Owl amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Long-eared Owl were insufficient (<20) to calculate density in this habitat type. + Long-eared Owl was not detected in this habitat type.

Northern Saw-whet Owl -- Northern Saw-whet Owl was detected only in Pinyon-juniper habitat (n = 2).

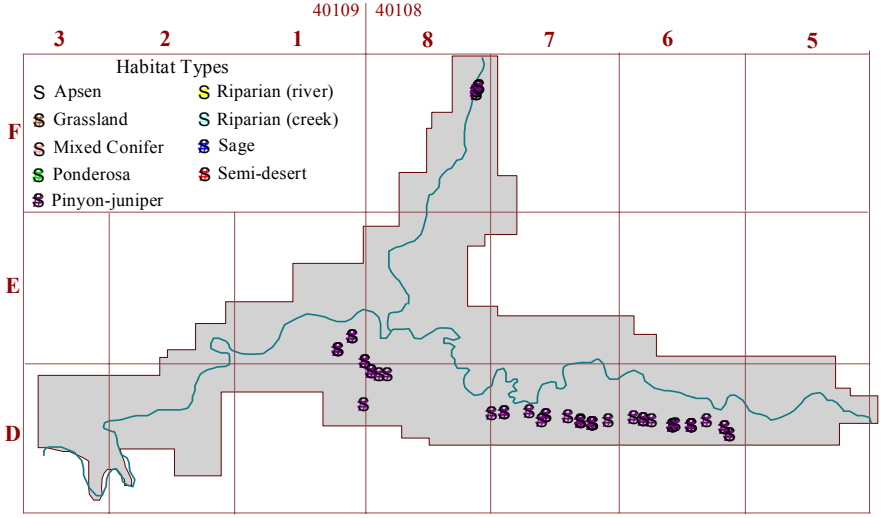


Distribution of Northern Saw-whet Owl observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

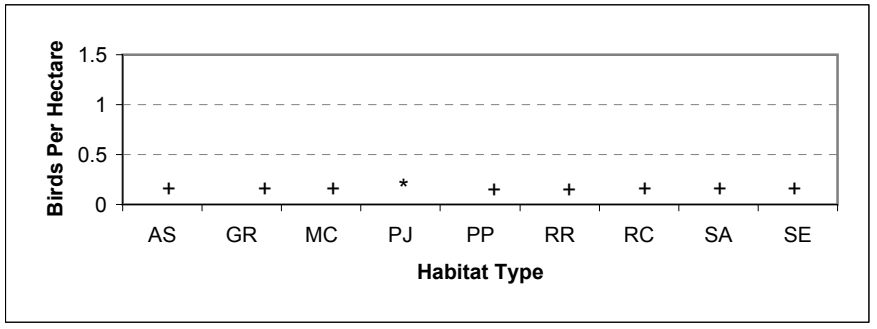


Density of Northern Saw-whet Owl amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Northern saw-whet Owl were insufficient (<20) to calculate density in this habitat type. + Northern Saw-whet Owl was not detected in this habitat type.

Common Poorwill -- Common Poorwill was detected only in Pinyon-juniper habitat (n = 61). Although detections were sufficient to calculate density, all detections were made during nocturnal surveys, and distances to individual birds were impossible to obtain, making density calculations impossible.

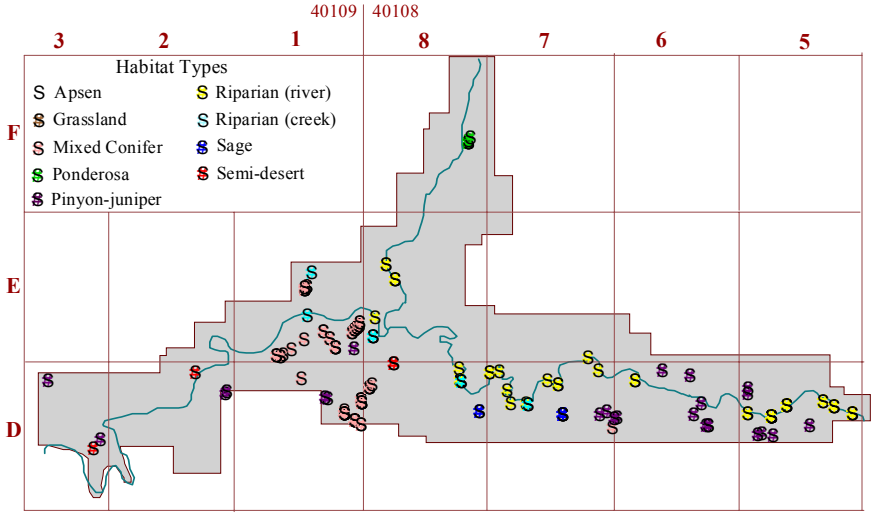


Distribution of Common Poorwill observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

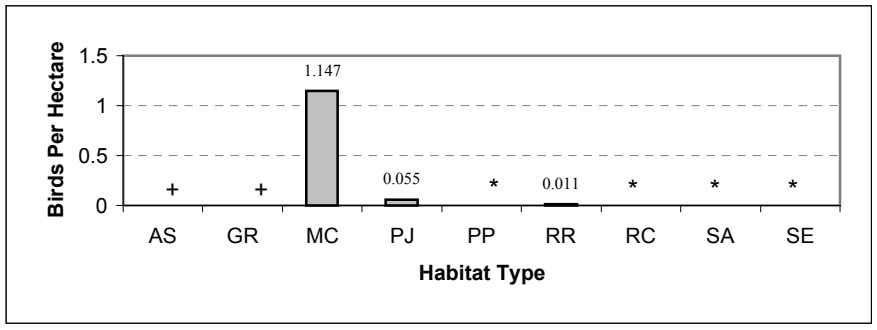


Density of Common Poorwill amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Common Poorwill were insufficient (<20) to calculate density in this habitat type. + Common Poorwill was not detected in this habitat type.

White-throated Swift -- Detections of White-throated Swift were sufficient to calculate densities in Mixed Conifer (D = 1.147 birds per hectare), Pinyon-juniper (D = 0.055 birds per hectare), and Riparian (river) (D = 0.011 birds per hectare) habitats. White-throated Swift was detected in low numbers in Ponderosa Pine (n = 6), Riparian (creek) (n = 5), Sage (n = 8), and Semi-desert (n = 4) habitats.

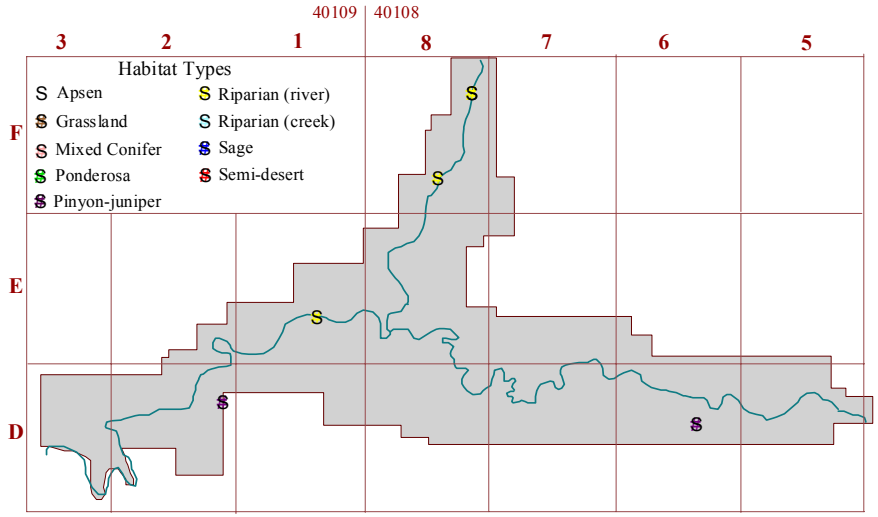


Distribution of White-throated Swift observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

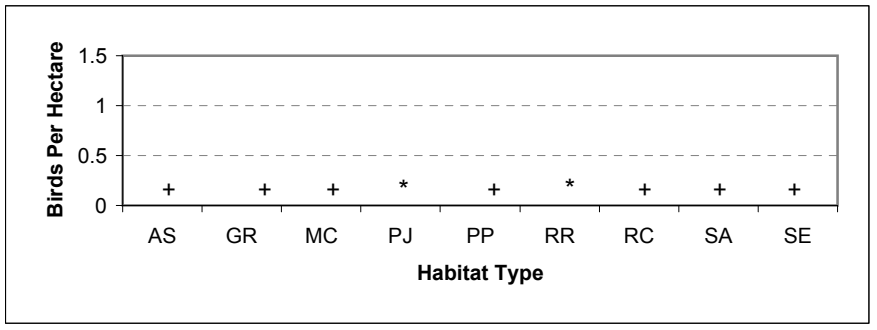


Density of White-throated Swift amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of White-throated Swift were insufficient (<20) to calculate density in this habitat type. + White-throated Swift was not detected in this habitat type.

Black-chinned Hummingbird -- Black-chinned Hummingbird was detected in low numbers in Pinyon-juniper (n = 2) and Riparian (river) (n = 4) habitats.

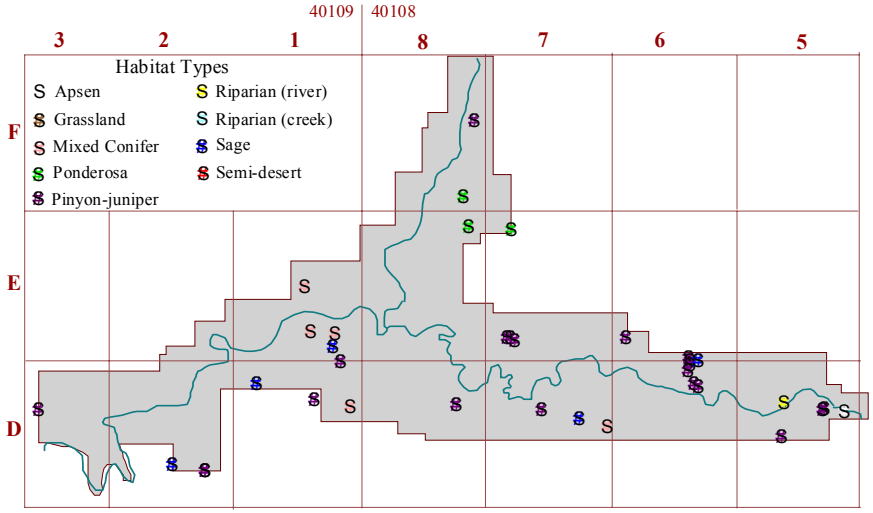


Distribution of Black-chinned Hummingbird observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

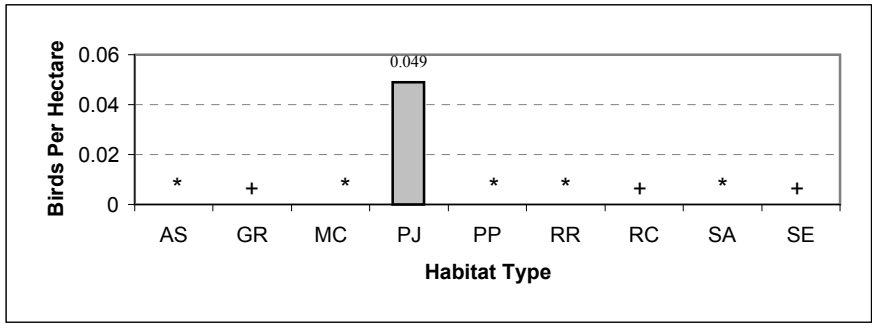


Density of Black-chinned Hummingbird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponserosa; RR=Riparian (rafting); RW=Riparian (walking); SA=Sage; and SE=Semi-desert. * Detections of Black-chinned Hummingbird were insufficient (<20) to calculate density in this habitat type. + Black-chinned Hummingbird was not detected in this habitat type.

Broad-tailed Hummingbird -- Detections of Broad-tailed Hummingbird were sufficient to calculate density in Pinyon-juniper habitat (D = 0.049 birds per hectare). Broad-tailed Hummingbird was detected in low numbers in Aspen (n = 1), Mixed Conifer (n = 5), Ponderosa Pine (n = 3), Riparian (river) (n = 1), and Sage (n = 5) habitats.

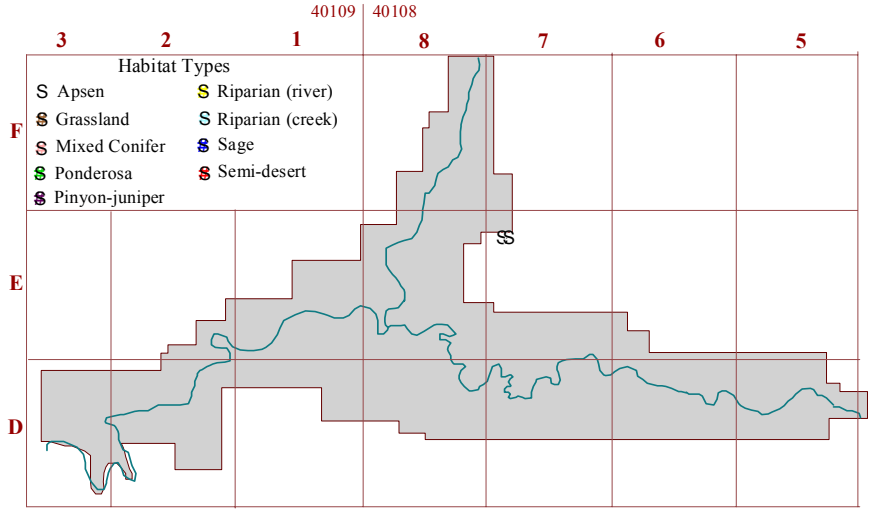


Distribution of Broad-tailed Hummingbird observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

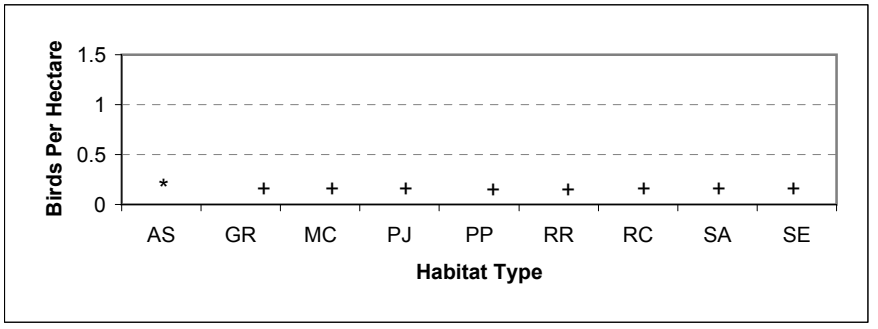


Density of Broad-tailed Hummingbird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Broad-tailed Hummingbird were insufficient (<20) to calculate density in this habitat type. + Broad-tailed hummingbird was not detected in this habitat type.

Red-naped Sapsucker -- Red-naped Sapsucker was detected only in Aspen habitat (n = 2).

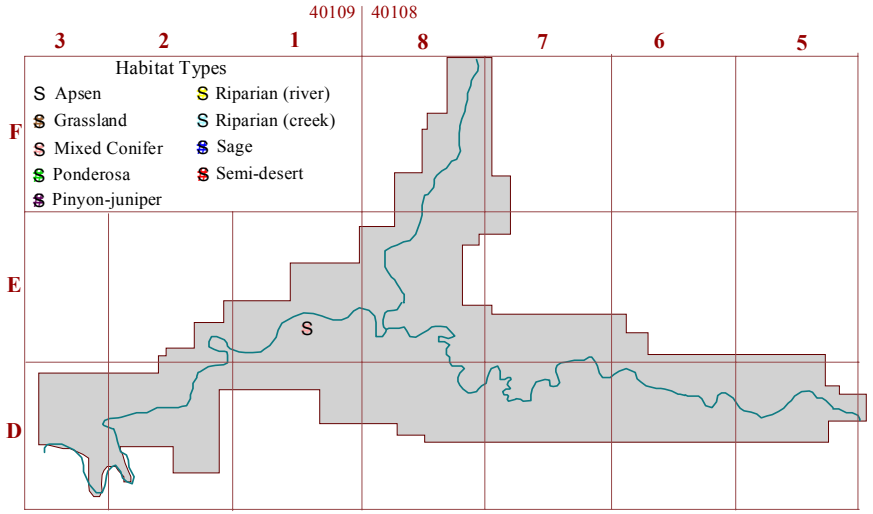


Distribution of Red-naped Sapsucker observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

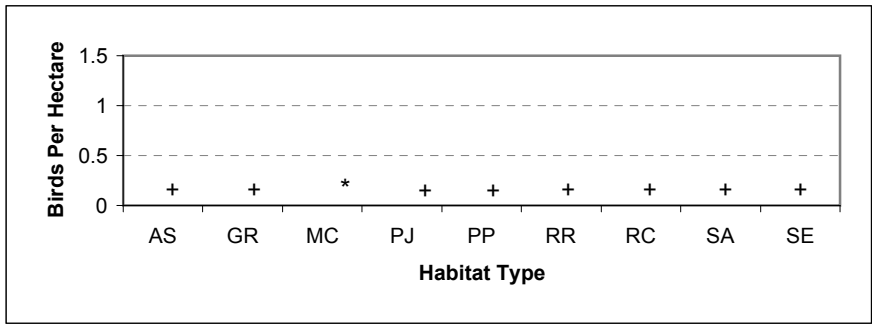


Density of Red-naped Sapsucker amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Red-naped Sapsucker were insufficient (<20) to calculate density in this habitat type. + Red-naped Sapsucker was not detected in this habitat type.

Downy Woodpecker -- Downy Woodpecker was detected only in Mixed Conifer habitat (n = 2).

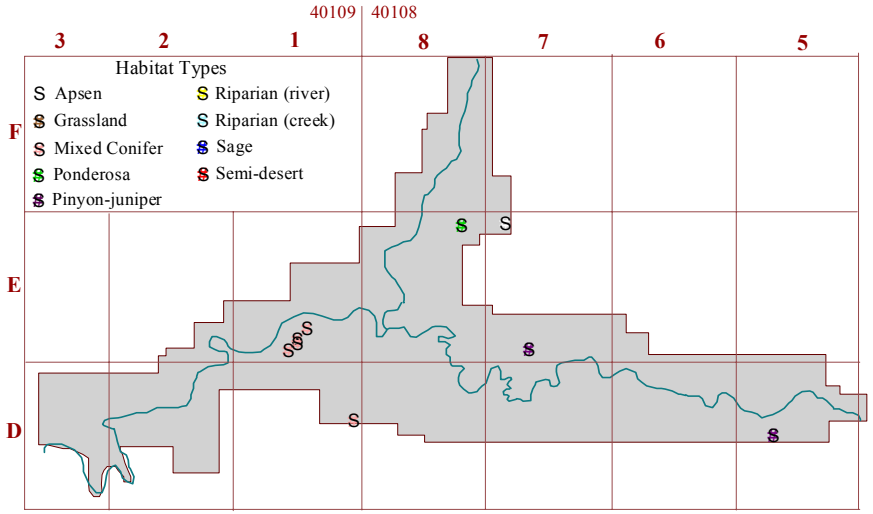


Distribution of Downy Woodpecker observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

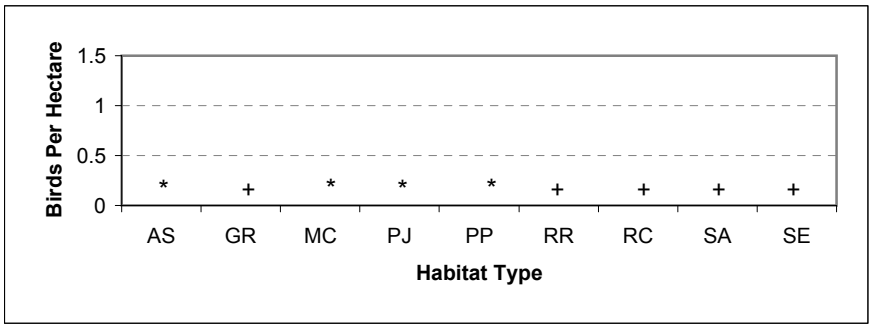


Density of Downy Woodpecker amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Downy Woodpecker were insufficient (<20) to calculate density in this habitat type. + Downy Woodpecker was not detected in this habitat type.

Hairy Woodpecker -- Hairy Woodpecker was detected in low numbers in in Aspen (n = 1), Mixed Conifer (n = 5), Pinyon-juniper (n = 2), and Ponderosa Pine (n = 1) habitats.

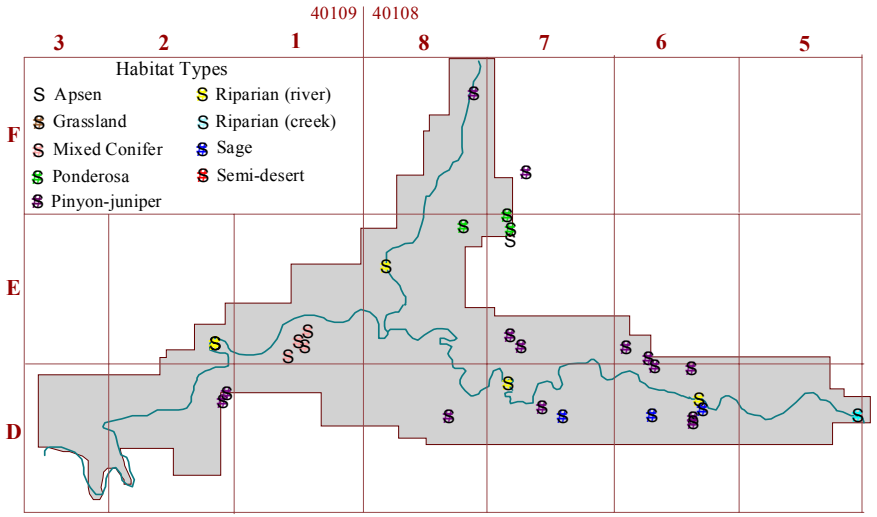


Distribution of Hairy Woodpecker observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

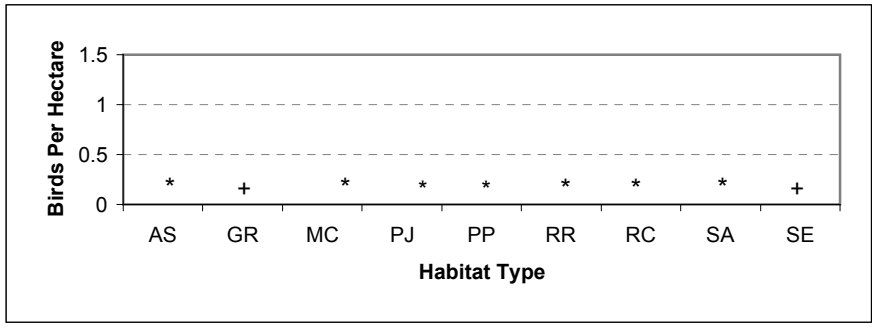


Density of Hairy Woodpecker amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Hairy Woodpecker were insufficient (<20) to calculate density in this habitat type. + Hairy Woodpecker was not detected in this habitat type.

Red-shafted Flicker -- Red-shafted Flicker was detected in low numbers in Aspen (n = 1), Mixed Conifer (n = 4), Pinyon-juniper (n = 14), Ponderosa Pine (n = 3), Riparian (river) (n = 6), Riparian (creek) (n = 1), and Sage (n = 3) habitats.

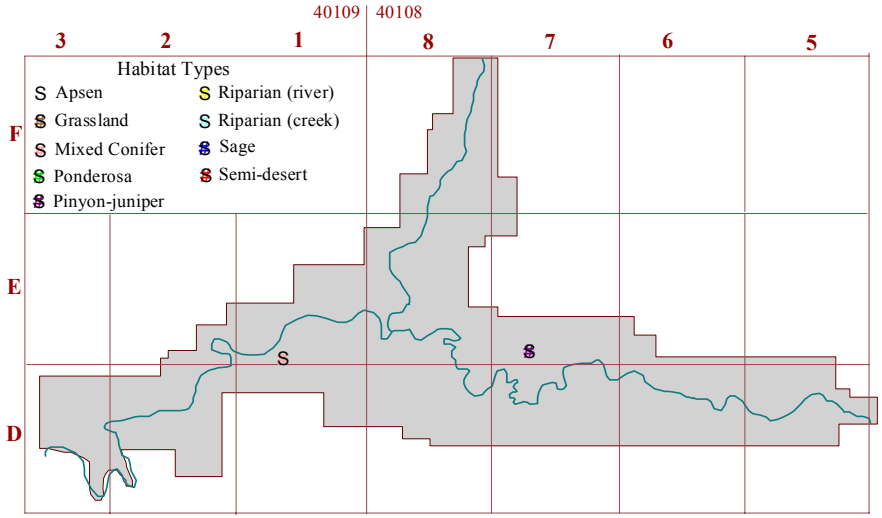


Distribution of Red-shafted Flicker observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

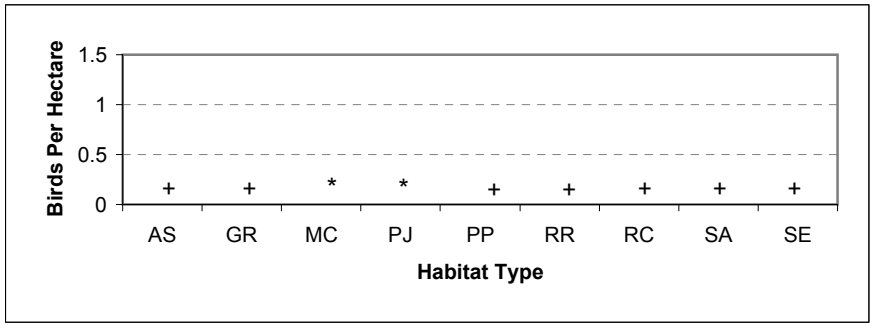


Density of Red-shafted Flicker amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Red-shafted Flicker were insufficient (<20) to calculate density in this habitat type. + Red-shafted Flicker was not detected in this habitat type.

Olive-sided Flycatcher -- Olive-sided Flycatcher was detected in low numbers in Mixed Conifer (n = 1) and Pinyon-juniper (n = 1) habitats.

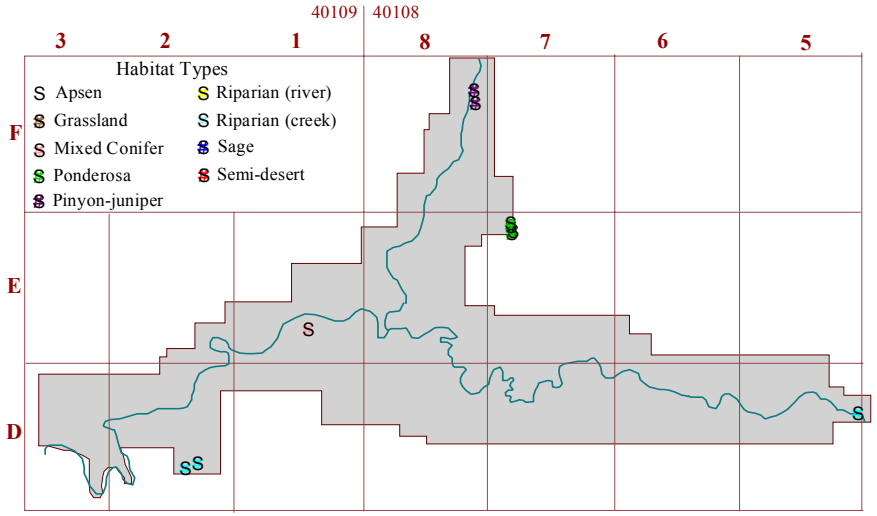


Distribution of Olive-sided Flycatcher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

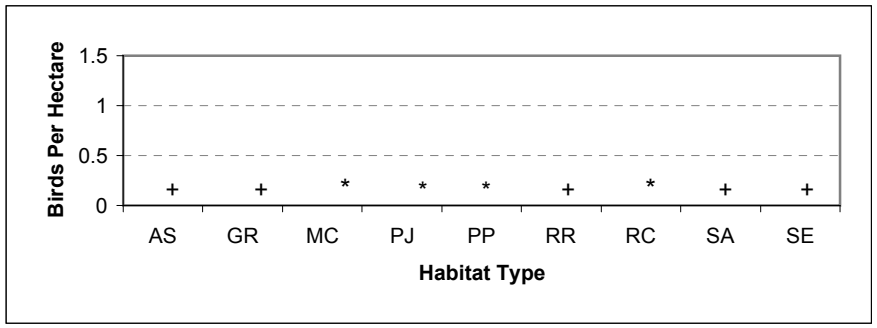


Density of Olive-sided Flycatcher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Olive-sided Flycatcher were insufficient (<20) to calculate density in this habitat type. + Olive-sided Flycatcher was not detected in this habitat type.

Western Wood-pewee -- Western Wood-pewee was detected in low numbers in Mixed Conifer (n = 1), Pinyon-juniper (n = 2), Ponderosa Pine (n = 4) Riparian (creek) (n = 3).

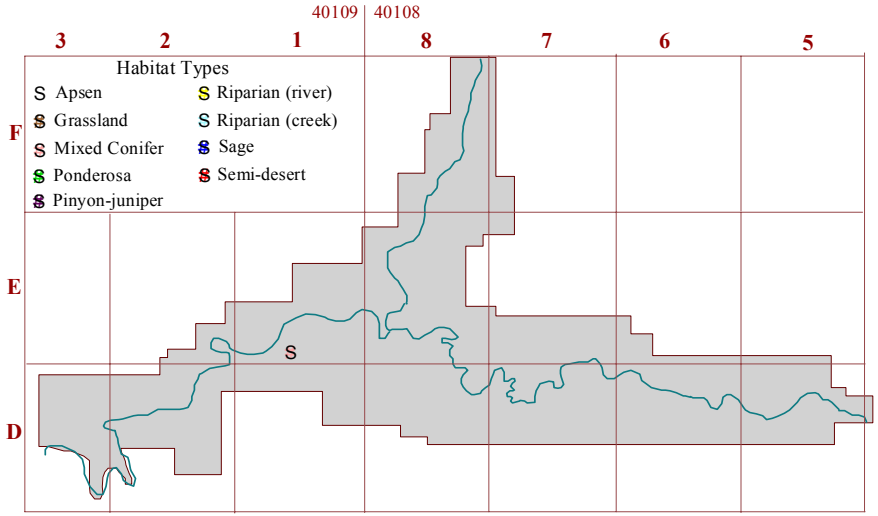


Distribution of Western Wood-pewee observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

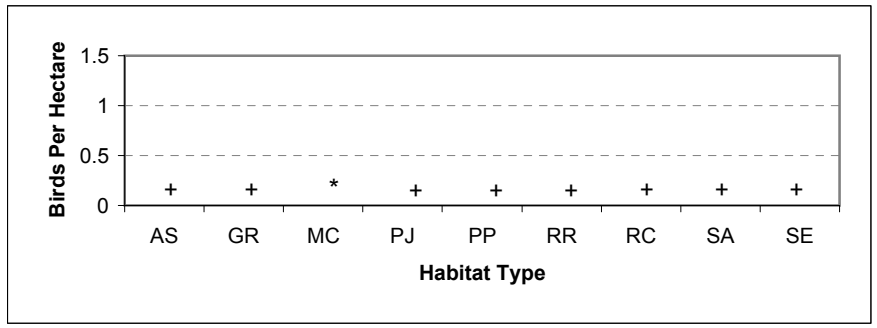


Density of Western Wood-pewee amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Western Wood-pewee were insufficient (<20) to calculate density in this habitat type. + Western Wood-pewee was not detected in this habitat type.

Hammond's Flycatcher -- Hammonds Flycatcher was detected only in Mixed Conifer habitat (n = 1).

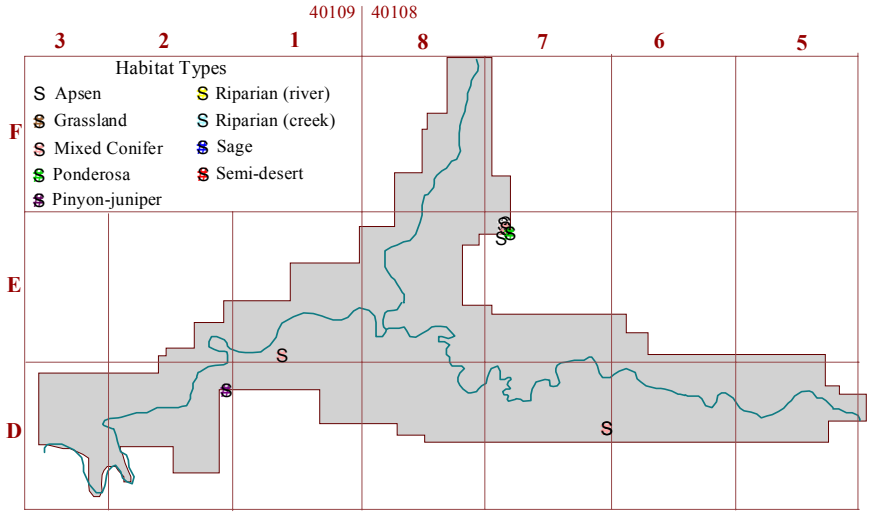


Distribution of Hammond's Flycatcher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

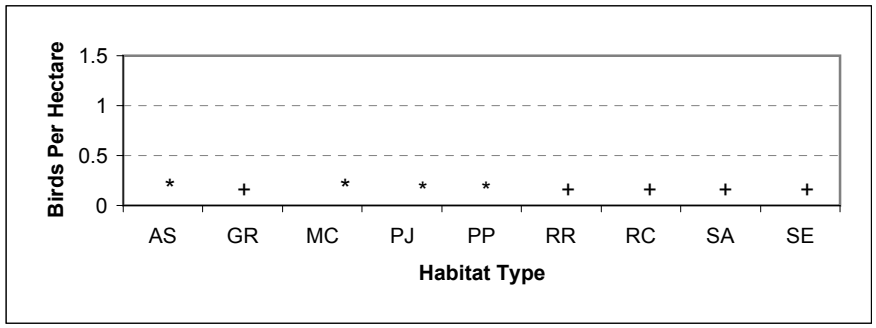


Density of Hammond's Flycatcher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Hammond's Flycatcher were insufficient (<20) to calculate density in this habitat type. + Hammond's Flycatcher was not detected in this habitat type.

Dusky Flycatcher -- Dusky Flycatcher was detected in low numbers in Aspen (n = 3), Mixed Conifer (n = 4), Pinyon-juniper (n = 1), and Ponderosa Pine (n = 1) habitats

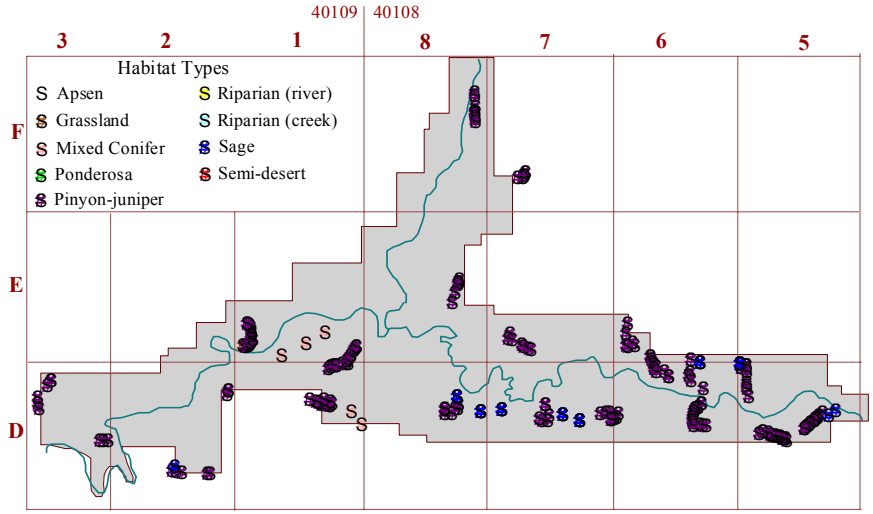


Distribution of Dusky Flycatcher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

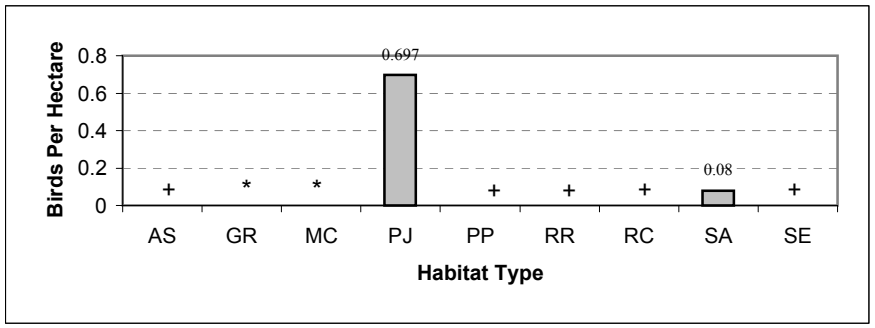


Density of Dusky Flycatcher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Dusky Flycatcher were insufficient (<20) to calculate density in this habitat type. + Dusky Flycatcher was not detected in this habitat type.

Gray Flycatcher -- Detections of Gray Flycatcher were sufficient to calculate density in Pinyon-juniper (D = 0.697 birds per hectare) and Sage (D = 0.080 birds per hectare) habitats. Gray Flycathcer was detected in low numbers in Grassland (n = 2) and Mixed Conifer (n = 5) habitats.

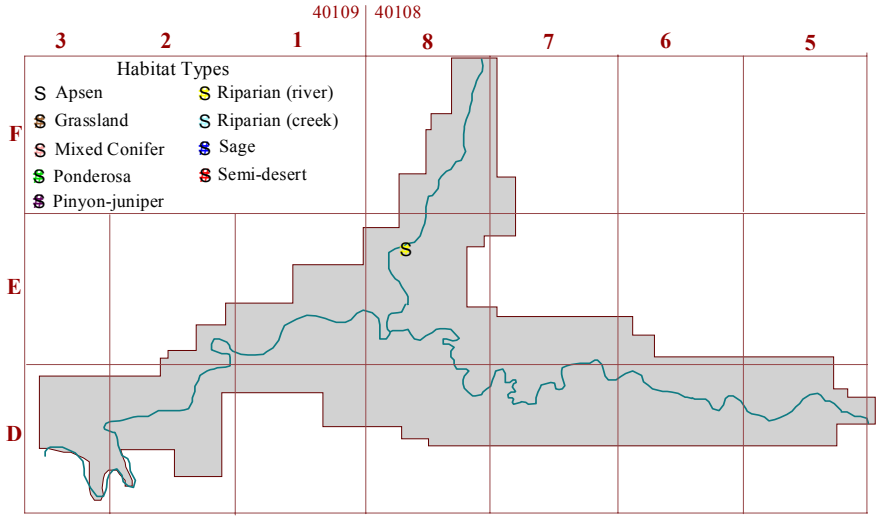


Distribution of Gray Flycatcher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

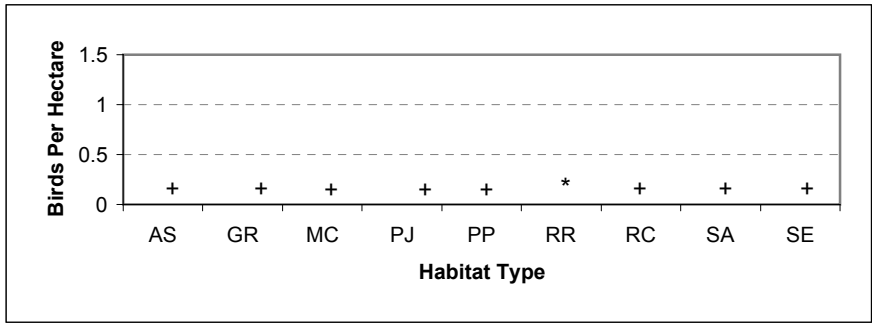


Density of Gray Flycatcher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Gray Flycatcher were insufficient (<20) to calculate density in this habitat type. + Gray Flycatcher was not detected in this habitat type.

Cordilleran Flycatcher -- Cordilleran Flycatcher was detected only in Riparian (river) habitat (n = 1).

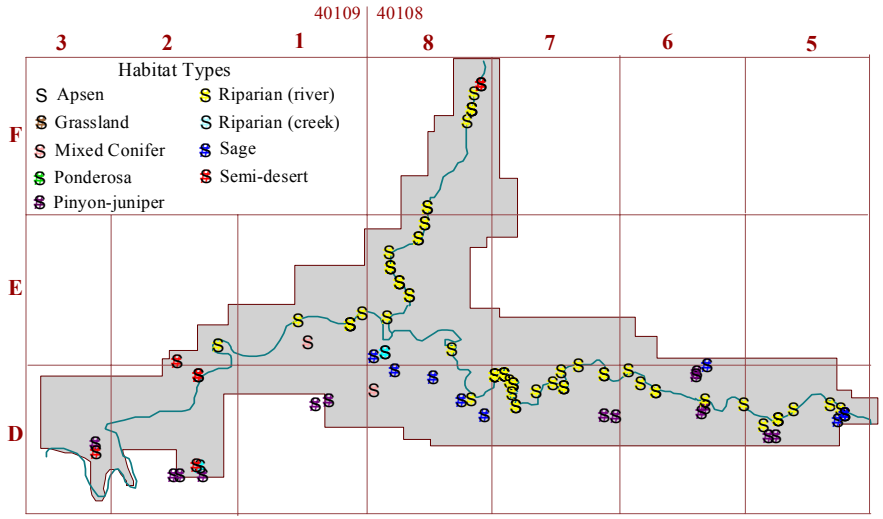


Distribution of Cordilleran Flycatcher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

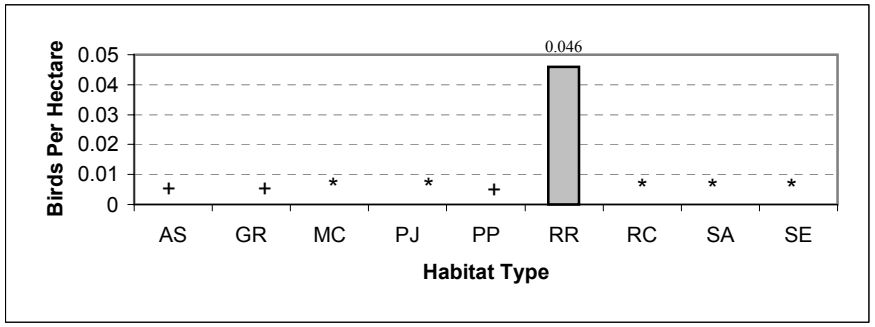


Density of Cordilleran Flycatcher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Cordilleran Flycatcher were insufficient (<20) to calculate density in this habitat type. + Cordilleran Flycatcher was not detected in this habitat type.

Say's Phoebe -- Detections of Say's Phoebe were sufficient to calculate density only in Riparian (river) (D = 0.046 birds per hectare) habitat. Say's Phoel detected in low numbers in Mixed Conifer (n= 2), Pinyon-juniper (n = 14), Riparian (creek) (n = 3), Sage (n = 10), and Semi-desert (n = 7) habitats.

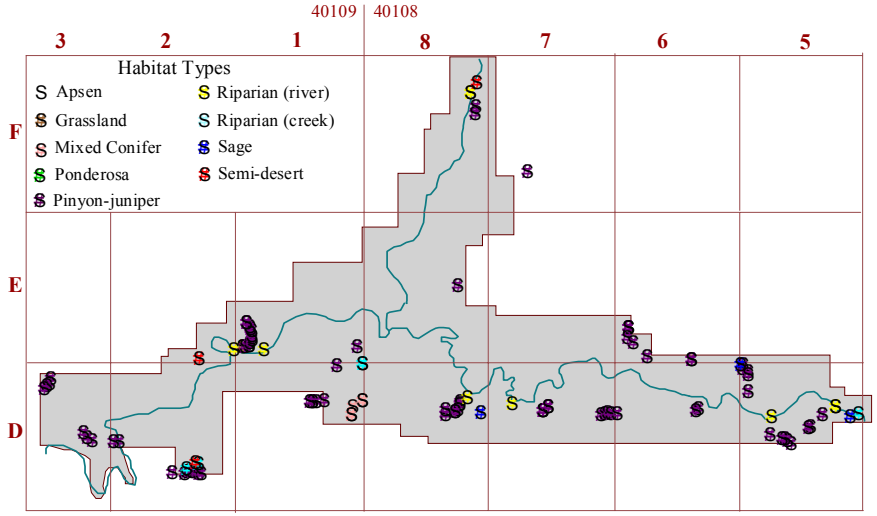


Distribution of Say's Phoebe observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

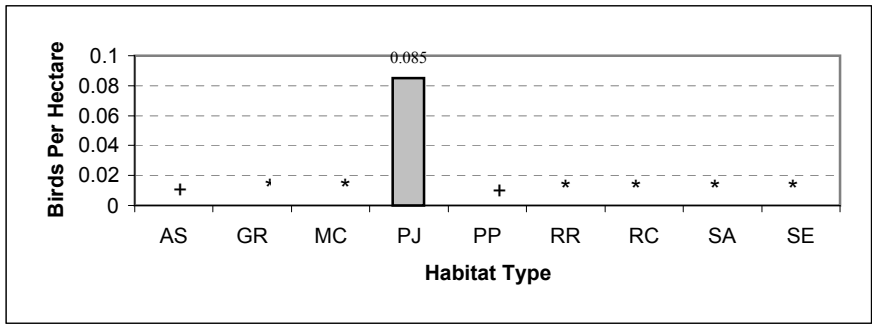


Density of Say's Phoebe amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Say's Phoebe were insufficient (<20) to calculate density in this habitat type. + Say's Phoebe was not detected in this habitat type.

Ash-throated Flycatcher -- Detections of Ash-throated Flycatcher were sufficient to calculate density only in Pinyon-juniper (D = 0.085 birds per hectare) habitat. Ash-throated Flycatcher was detected in low numbers in Grassland (n = 2), Mixed Conifer (n = 5), Riparian (river) (n = 9), Riparian (creek) (n = 5), Sage (n = 3), and Semi-desert (n = 3) habitats.

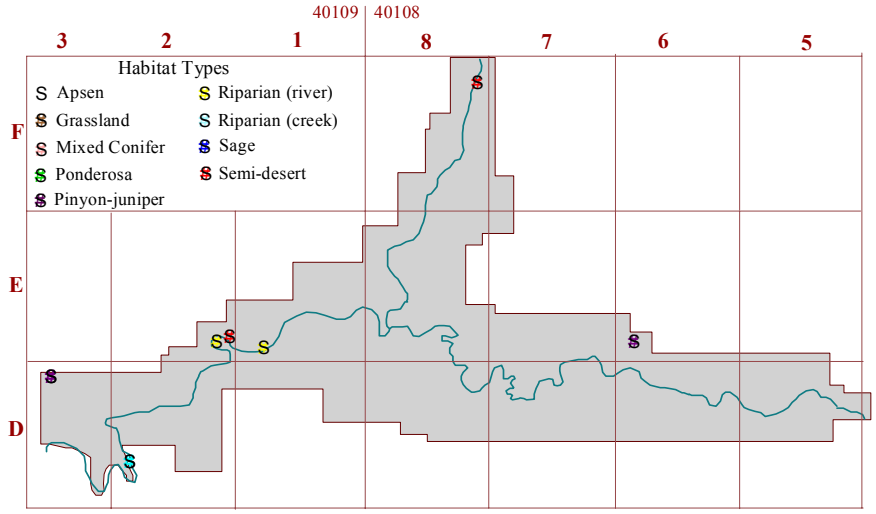


Distribution of Ash-throated Flycatcher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

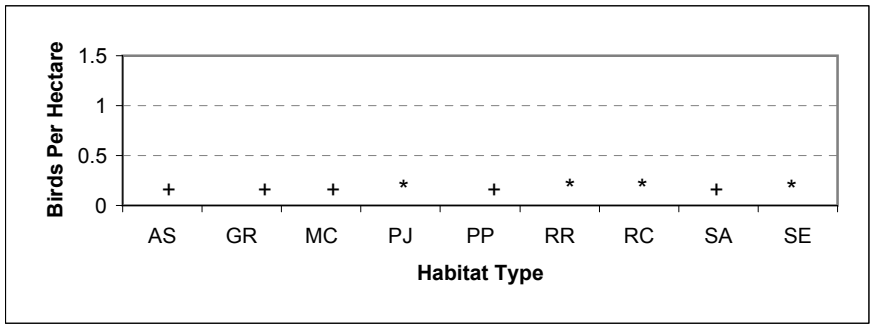


Density of Ash-throated Flycatcher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Ash-throated Flycatcher were insufficient (<20) to calculate density in this habitat type. + Ash-throated Flycatcher was not detected in this habitat type.

Western Kingbird -- Western Kingbird was detedted in low numbers in Pinyon-juniper (n = 3), Riparian (river) (n = 2), Riparian (creek) (n = 2), and Semi-desert (n = 2) habitats.

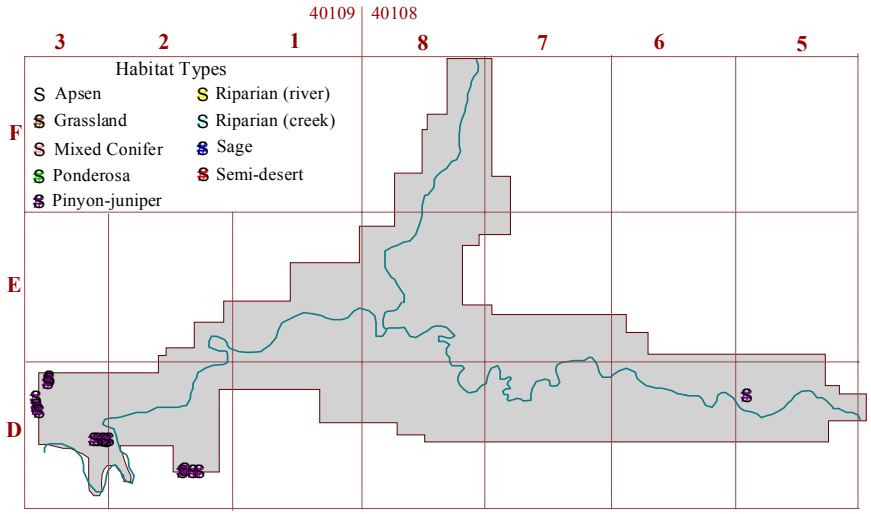


Distribution of Western Kingbird observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

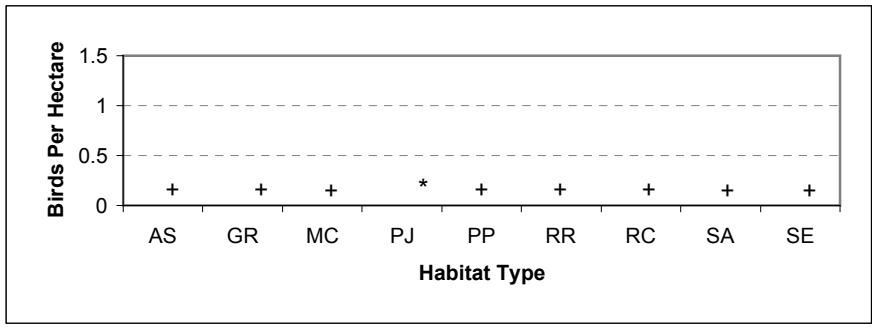


Density of Western Kingbird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Western Kingbird were insufficient (<20) to calculate density in this habitat type. + Western Kingbird was not detected in this habitat type.

Gray Vireo -- Gray Vireo was detected only in Pinyon-juniper habitat (n = 17).

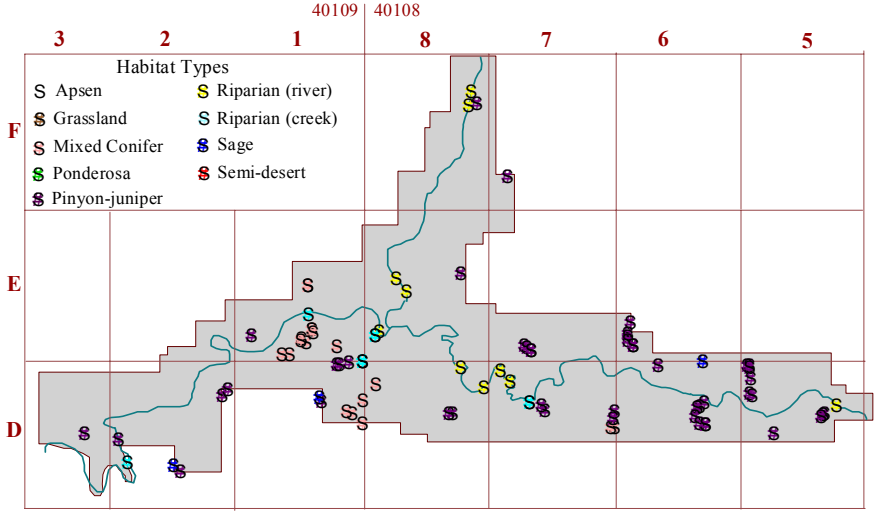


Distribution of Gray Vireo observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

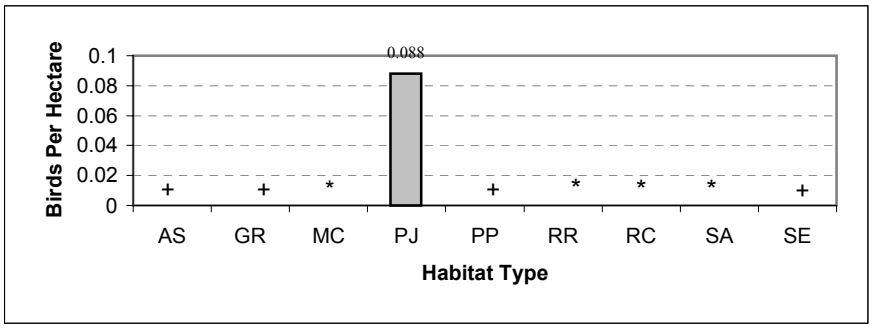


Density of Gray Vireo amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Gray Vireo were insufficient (<20) to calculate density in this habitat type. + Gray Vireo was not detected in this habitat type.

Plumbeous Vireo -- Detections of Plumbeous Vireo were sufficient to calculate density only in Pinyon-juniper habitat (D = 0.088 birds per hectare). Plumbeous Vireo was detected in low numbers in Mixed Conifer (n = 18), Riparian (river) (n = 10), Riparian (creek) (n = 9), and Sage (n = 3) habitats.

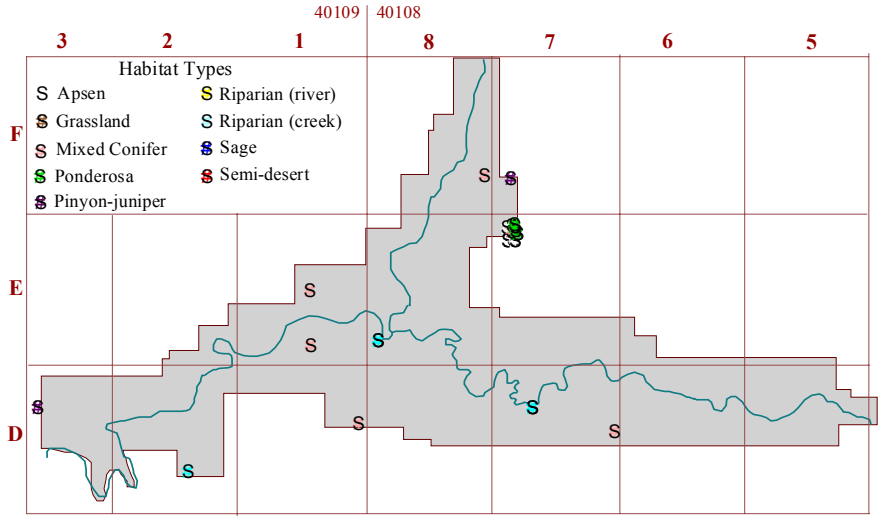


Distribution of Plumbeous Vireo observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

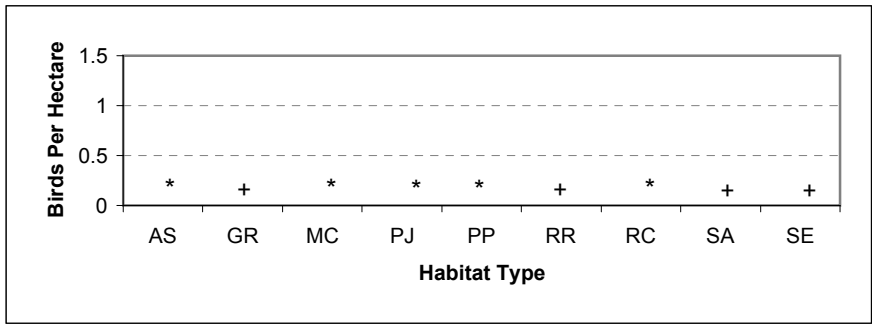


Density of Plumbeous Vireo amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa;
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Plumbeous Vireo were insufficient (<20) to calculate density in this habitat type. + Plumbeous Vireo was not detected in this habitat type.

Warbling Vireo -- Warbling Vireo was detected in low numbers in Aspen (n = 14), Mixed Conifer (n = 6), Pinyon-juniper (n = 2), Ponderosa Pine (n = 8) and Riparian (creek) (n = 7) habitats.

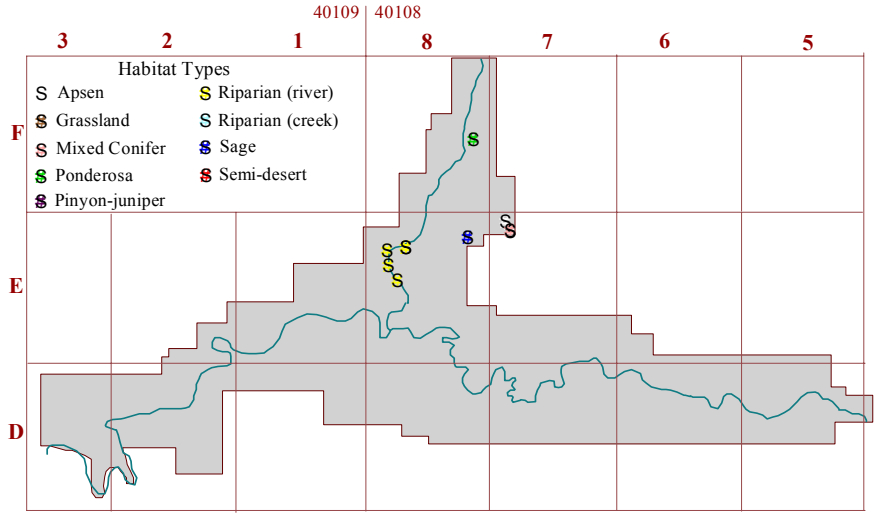


Distribution of Warbling Vireo observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

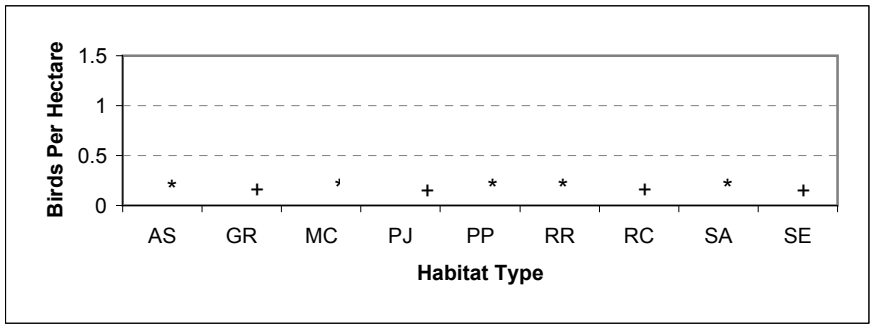


Density of Warbling Vireo amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Warbling Vireo were insufficient (<20) to calculate density in this habitat type. + Warbling Vireo was not detected in this habitat type.

Steller's Jay -- Steller's Jay was detected in low numbers in Aspen (n = 1), Mixed Conifer (n = 1), Ponderosa Pine (n = 1), Riparian (river) (n = 5), and Sage (n = 1) habitats.

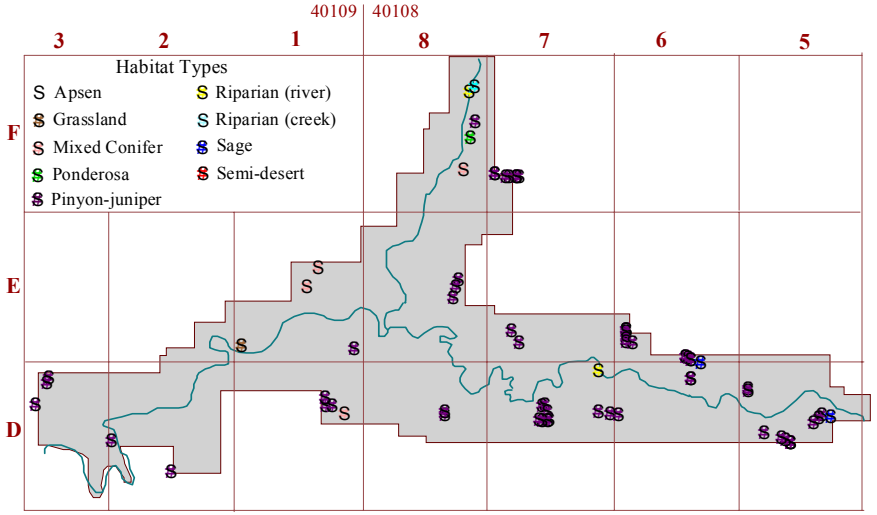


Distribution of Steller's Jay observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

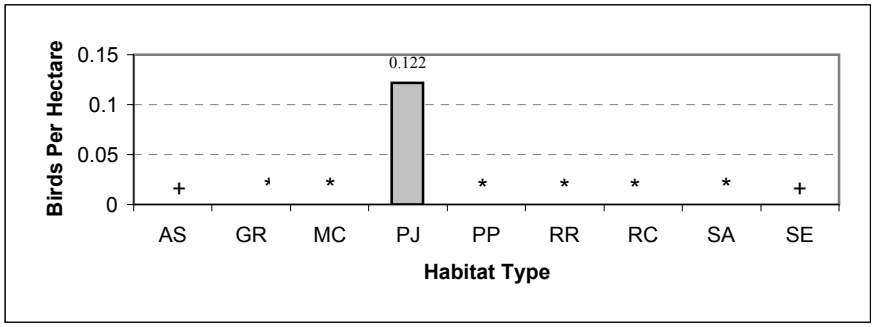


Density of Steller's Jay amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Steller's Jay were insufficient (<20) to calculate density in this habitat type. + Steller's Jay was not detected in this habitat type.

Western Scrub-Jay -- Detections of Western Scrub-Jay were sufficient to calculate density only in Pinyon-juniper habitat (D = 0.122 birds per hectare). Western Scrub-Jay was detected in low numbers in Grassland (n = 1), Mixed Conifer (n = 4), Ponderosa Pine (n = 1), Riparian (river) (n = 2), Riparian (creek) (n = 1), and Sage (n = 2) habitat.

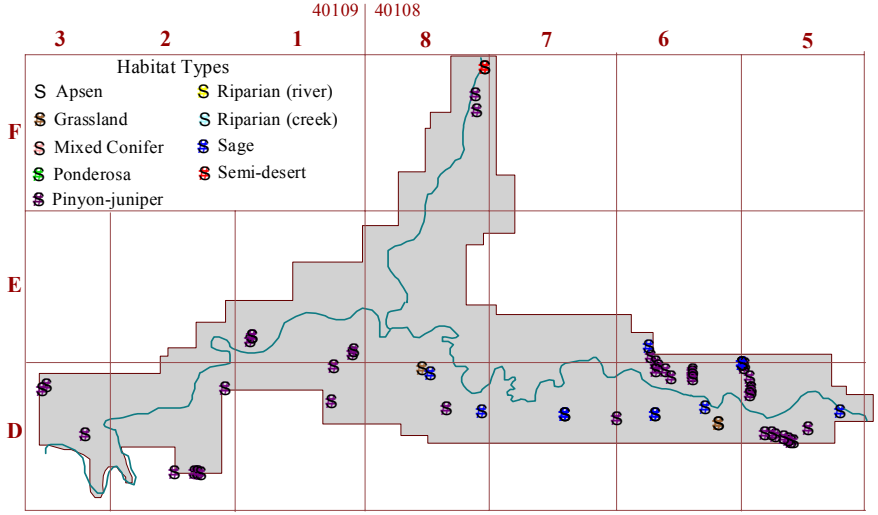


Distribution of Western Scrub-Jay observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

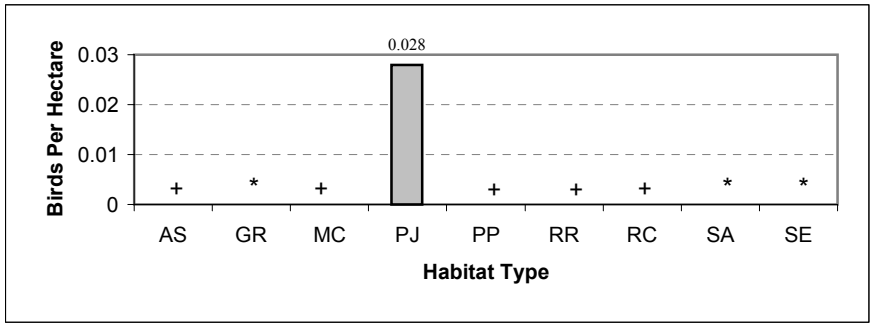


Density of Western Scrub-Jay amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Western Scrub-Jay were insufficient (<20) to calculate density in this habitat type. + Western Scrub-Jay was not detected in this habitat type.

Pinyon Jay -- Detections of Pinyon Jay were sufficient to calculate density only in Pinyon Juniper habitat (D = 0.028 birds per hectare). Pinyon Jay was detected in low numbers in Grassland (n = 3), sage (n = 14), and Semi-desert (n = 2) habitats.

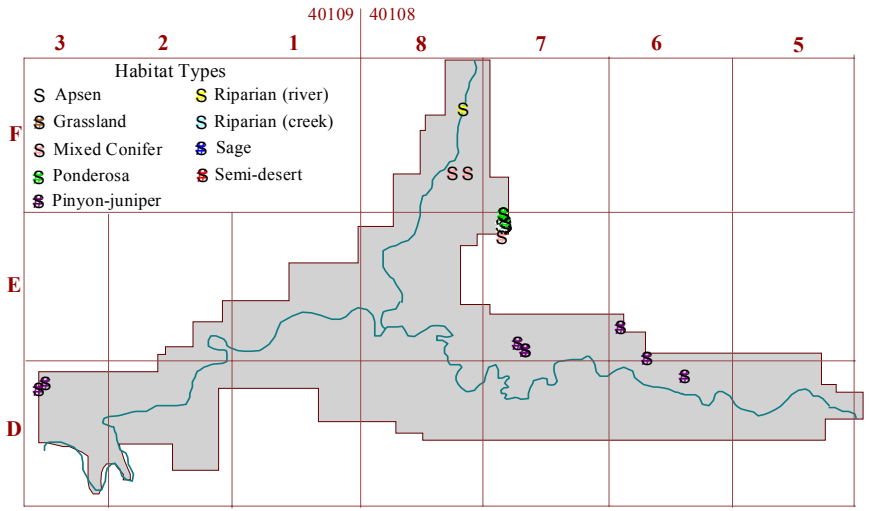


Distribution of Pinyon-jay observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

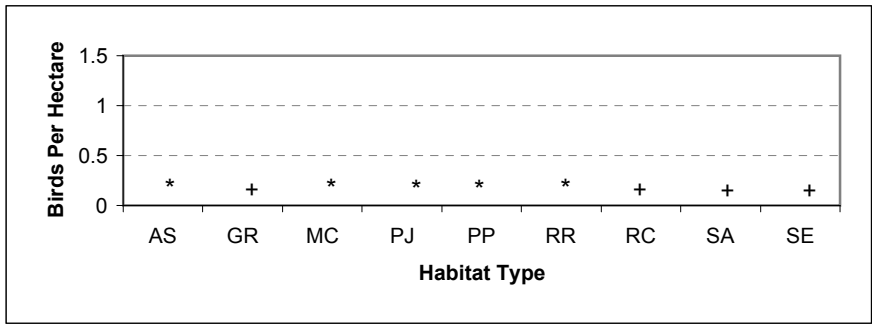


Density of Pinyon Jay amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Pinyon Jay were insufficient (<20) to calculate density in this habitat type. + Pinyon Jay was not detected in this habitat type.

Clark's Nuctcracker -- Clark's Nutcracker was detected in low numbers in Aspen (n = 9), Mixed Conifer (n = 3), Pinyon-juniper (n = 8), Ponderosa Pine (n = 5), and Riparian (river) (n = 1) habitats.

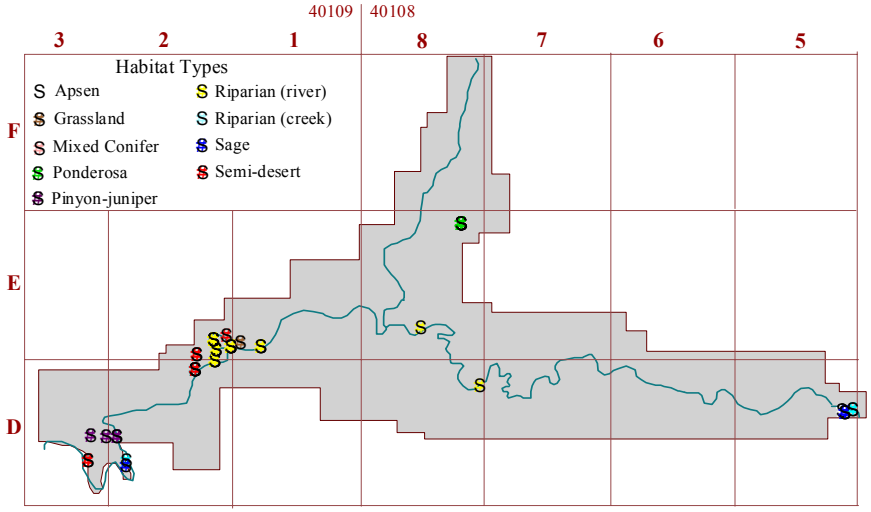


Distribution of Clark's Nutcracker observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

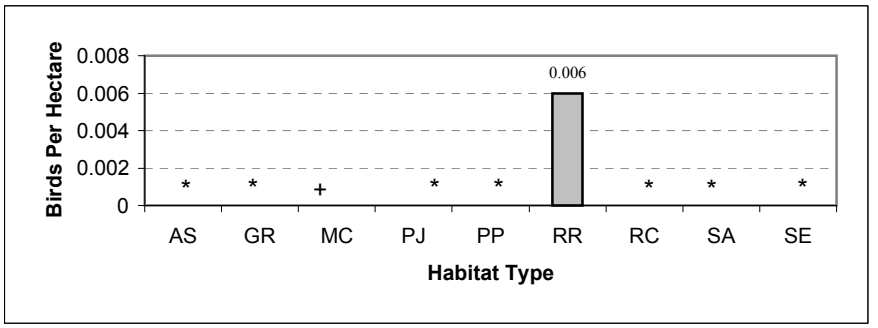


Density of Clark's Nutcracker amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Clark's Nutcracker were insufficient (<20) to calculate density in this habitat type. + Clark's Nutcracker was not detected in this habitat type.

Black-billed Magpie -- Detections of Black-billed Magpie were sufficient to calculate density only in Riparian (rafting) habitat (D = 0.006 birds per hectare. Black-billed Magpie was detected in low numbers in Aspen (n = 2), Grassland (n = 1), Pinyon-juniper (n = 4), Ponderosa Pine (n = 10), Riparian (creek) (n = 8), Sage (n = 7), and Semi-desert (n = 7) habitats.

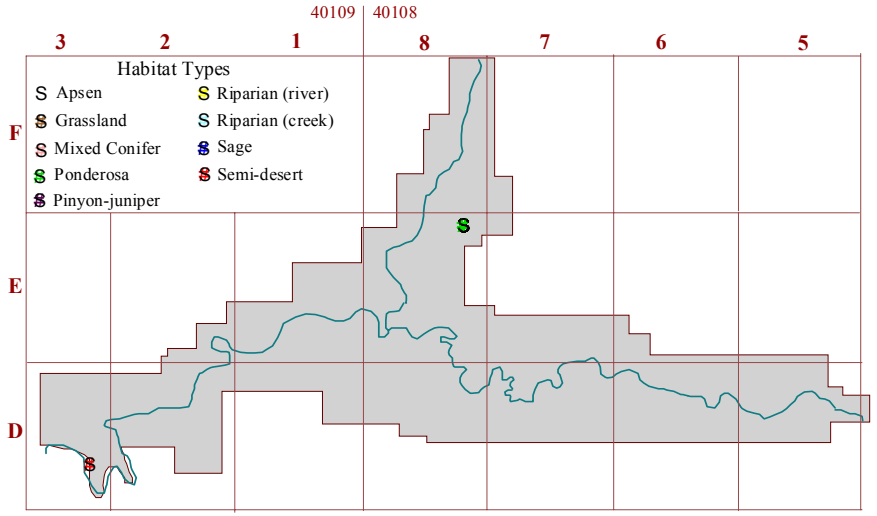


Distribution of Black-billed Magpie observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

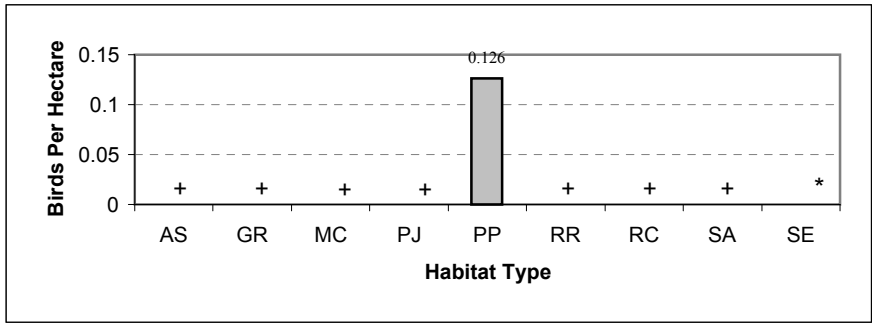


Density of Black-billed Magpie amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Black-billed Magpie were insufficient (<20) to calculate density in this habitat type. + Black-billed Magpie was not detected in this habitat type.

American Crow -- Detections of American Crow were sufficient to calculate density in Ponderosa Pine (D = 0.126 birds per hectare). American Crow was detected in low numbers in Semi-desert habitat (n = 1).

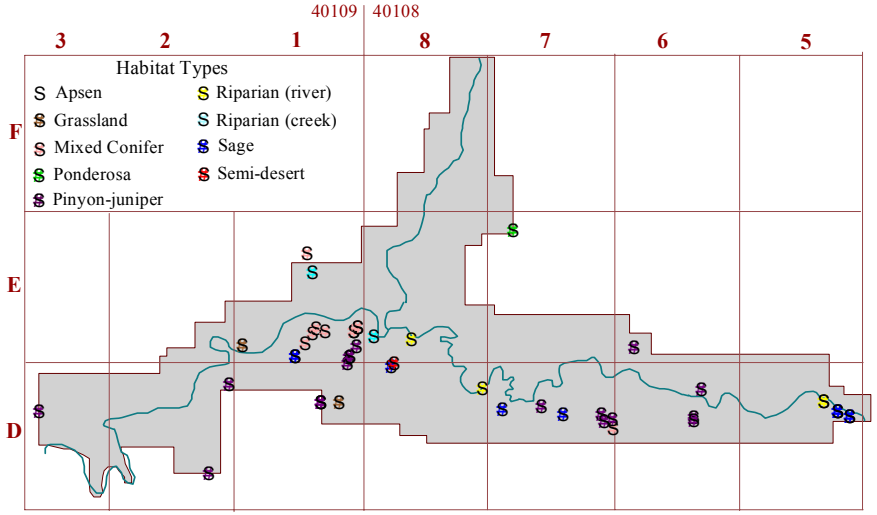


Distribution of American Crow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

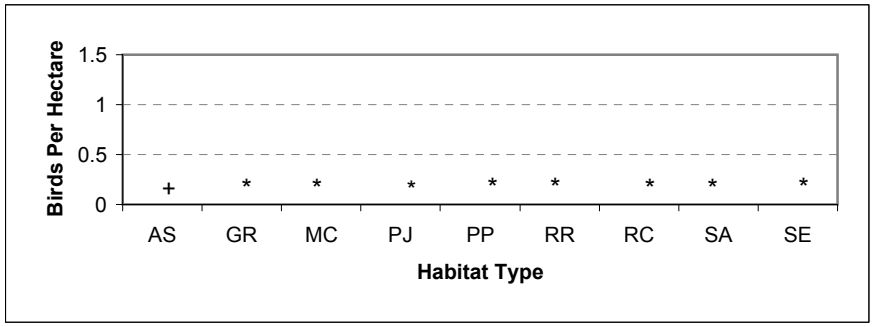


Density of American Crow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of American Crow were insufficient (<20) to calculate density in this habitat type. + American Crow was not detected in this habitat type.

Common Raven -- Common Raven was detected in low numbers in Grassland (n = 2), Mixed Conifer (n = 10), Pinyon-juniper (n = 18), Ponderosa Pine (n = 1), Riparian (river) (n = 4), Riaparian (creek) (n = 2), Sage (n = 10), and Semi-desert (n = 1) habitats.

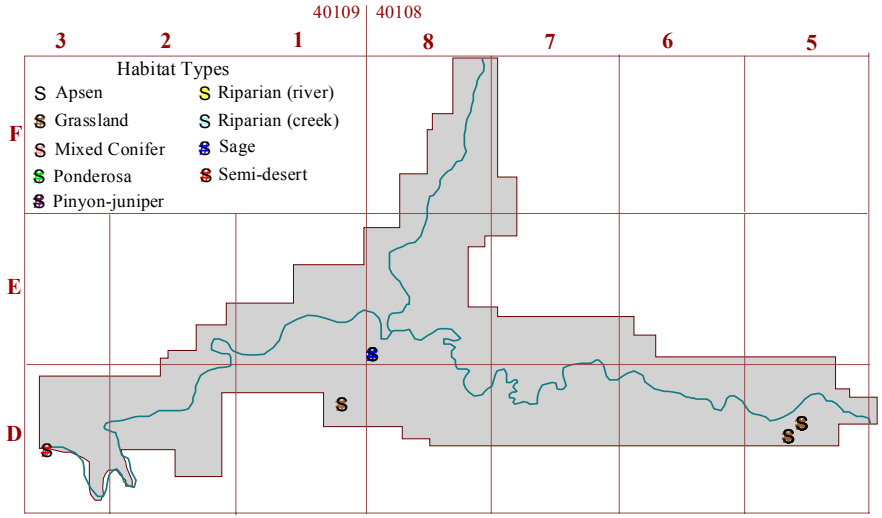


Distribution of Common Raven observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

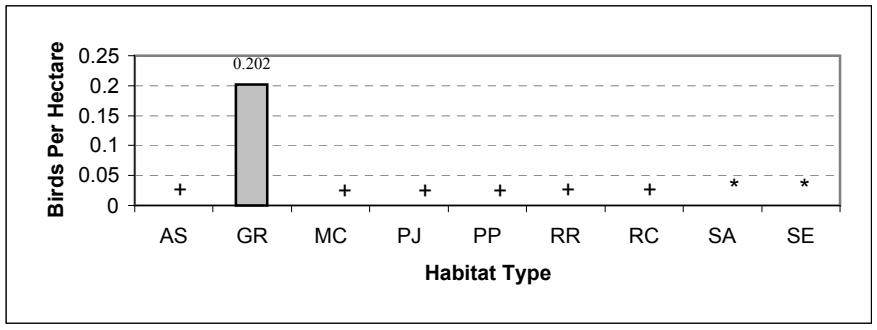


Density of Common Raven amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Common Raven were insufficient (<20) to calculate density in this habitat type. + Common Raven was not detected in this habitat type.

Horned Lark -- Detections of Horned Lark were sufficient to calculate density in Grassland habitat (D = 0.202 birds per hectare). Horned Lark was detected in low numbers in Sage (n = 3) and Semi-desert habitat (n = 1).

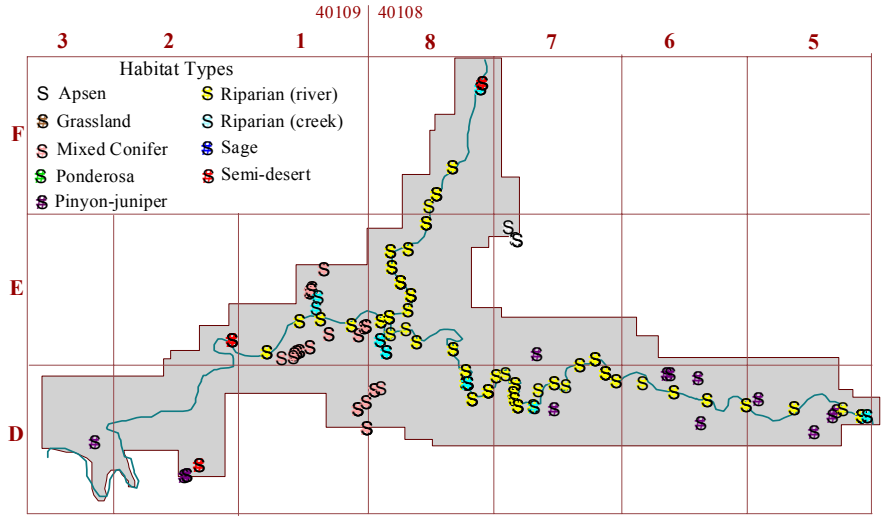


Distribution of Horned Lark observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

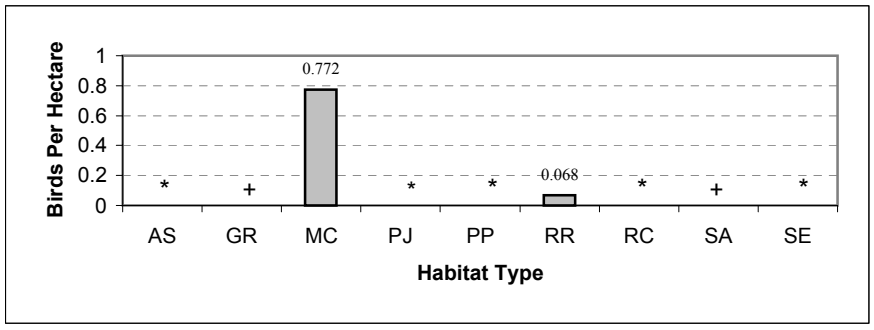


Density of Horned Lark amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Horned Lark were insufficient (<20) to calculate density in this habitat type. + Horned Lark was not detected in this habitat type.

Violet-green Swallow -- Detections of Violet-green Swallow were sufficient to calculate density in Mixed Conifer (D = 0.772 birds per hectare), and Riparian (river) (D = 0.068 birds per hectare). Violet-green Swallow was detected in low numbers in Aspen (n = 5), Pinyon-juniper (n = 8), Ponderosa Pine (n = 1), Riparian (creek) (n = 16), and Semi-desert (n = 9) habitats.

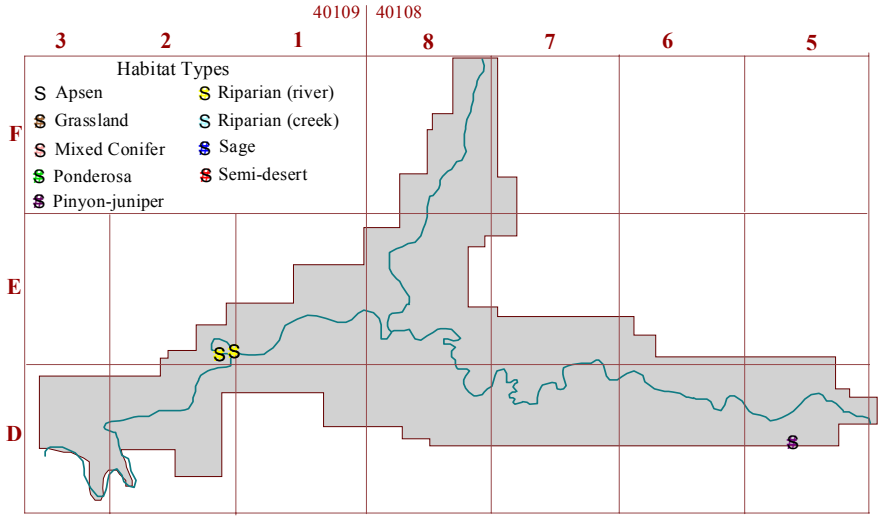


Distribution of Violet-green Swallow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

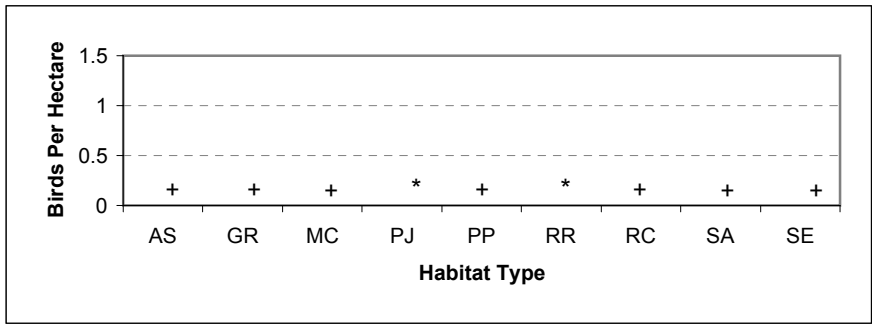


Density of Violet-green Swallow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Violet-green Swallow were insufficient (<20) to calculate density in this habitat type. + Violet-green Swallow was not detected in this habitat type.

Northern Rough-winged Swallow -- Northern Rough-winged Swallow was detected in low numbers in Pinyon-juniper (n = 1) and Riparian (river) (n = 3) habitats.

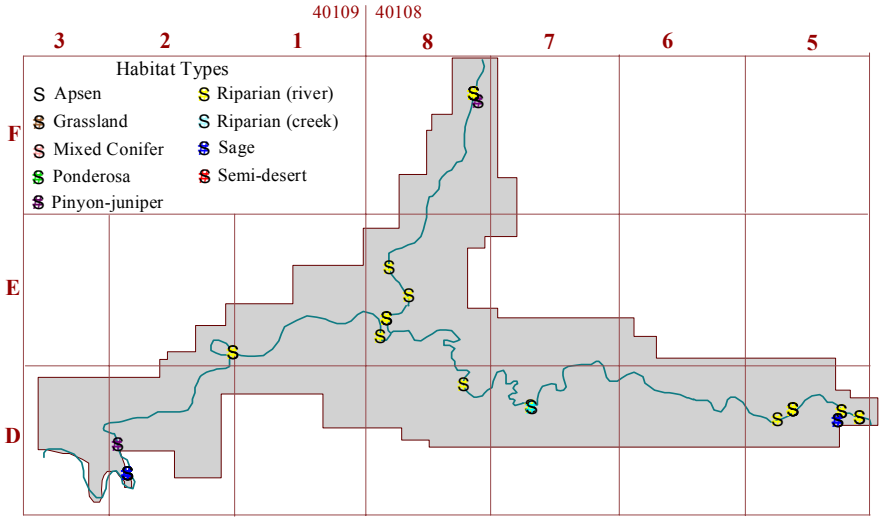


Distribution of Northern Rough-winged Swallow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

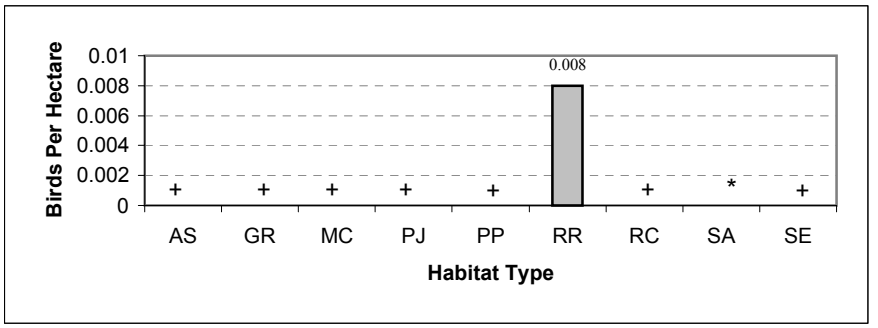


Density of Northern Rough-winged Swallow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Northern Rough-winged Swallow were insufficient (<20) to calculate density in habitat type. + Northern Rough-winged Swallow was not detected in this habitat type.

Cliff Swallow -- Detections of Cliff Swallow were sufficient to calculate density in Riparian (river) habitat (D = 0000 birds per hectare). Cliff Swallow was detected in low numbers in Sage Habitat (n = 8).

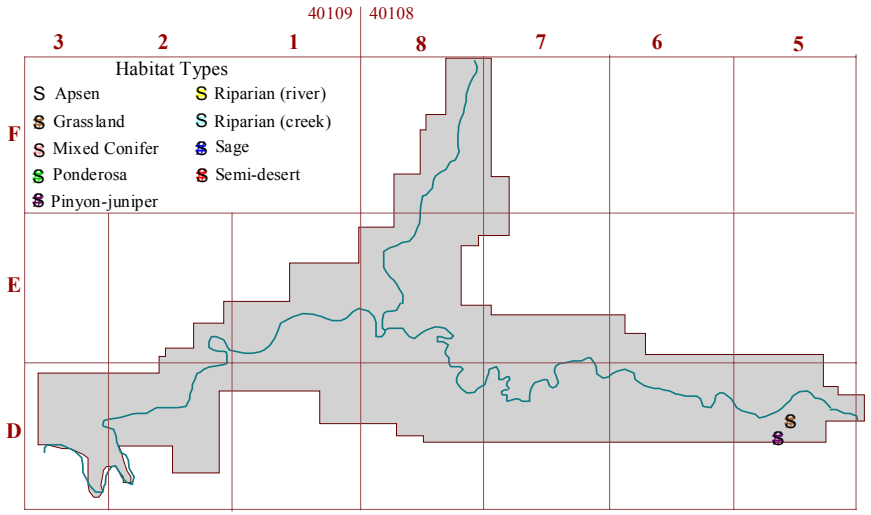


Distribution of Cliff Swallow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

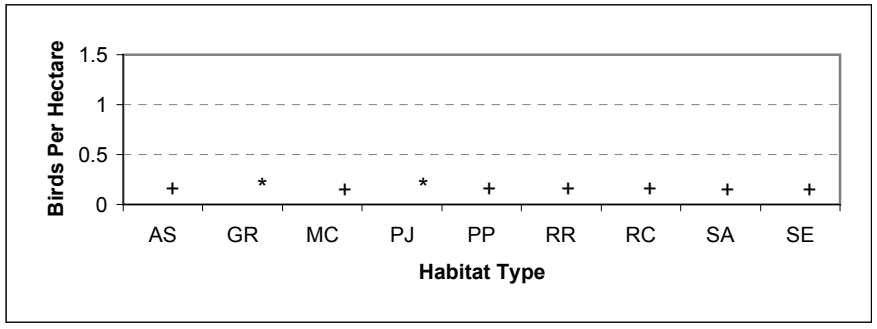


Density of Cliff Swallow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Cliff Swallow were insufficient (<20) to calculate density in this habitat type. + Cliff Swallow was not detected in this habitat type.

Barn Swallow -- Barn Swallow was detected in low numbers in Grassland (n = 1) and Pinyon-juniper (n = 1) habitats.

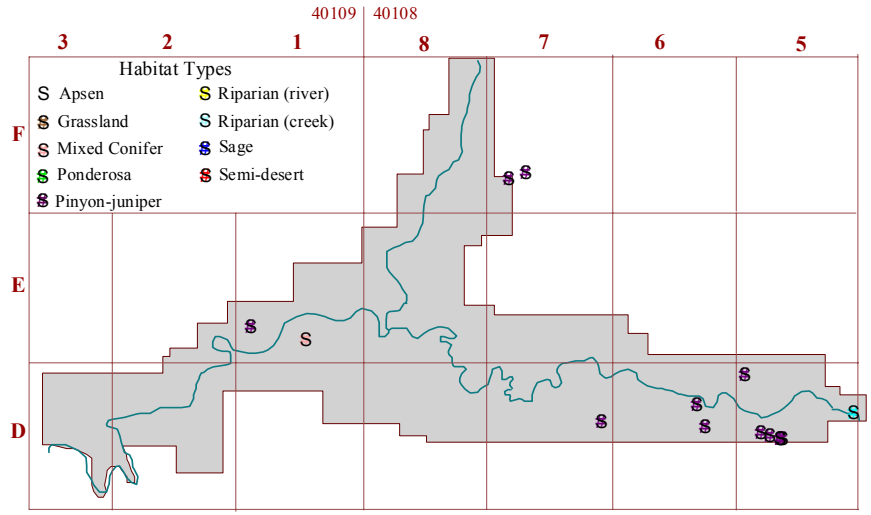


Distribution of Barn Swallow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

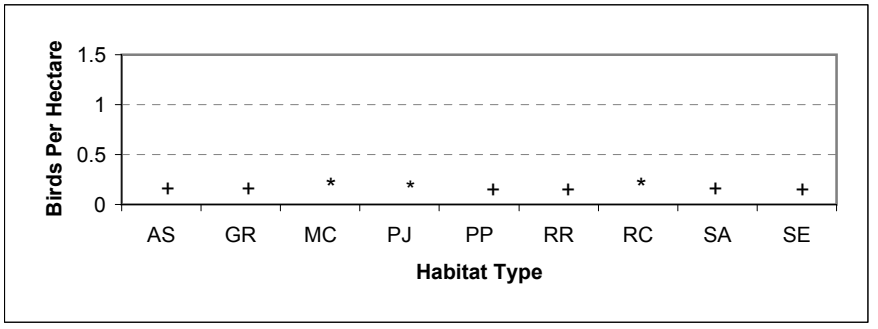


Density of Barn Swallow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert. * Detections of Barn Swallow were insufficient (<20) to calculate density in this habitat type. + Barn Swallow was not detected in this habitat type.

Black-capped Chickadee -- Black-capped Chickadee was detected in low numbers in Mixed Conifer (n = 1), Pinyon-juniper (n = 12), and Riparian (creek) (n = 1) habitats.

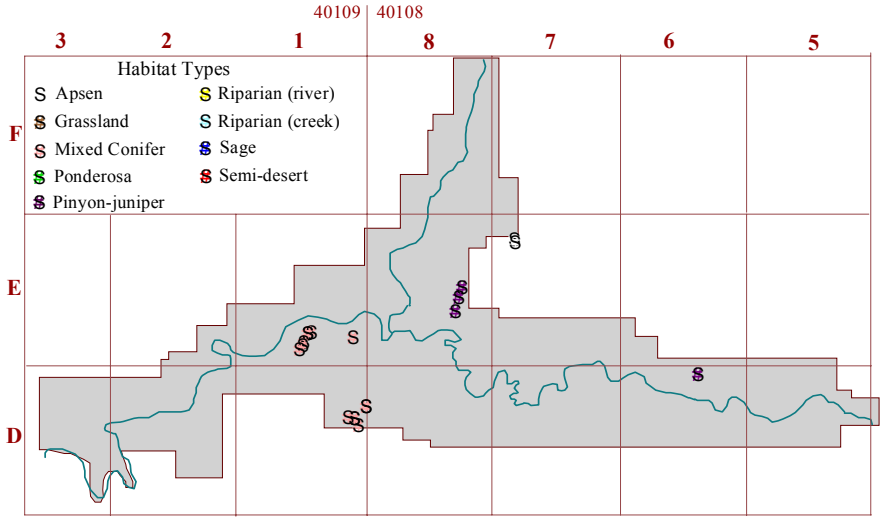


Distribution of Black-capped Chickadee observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

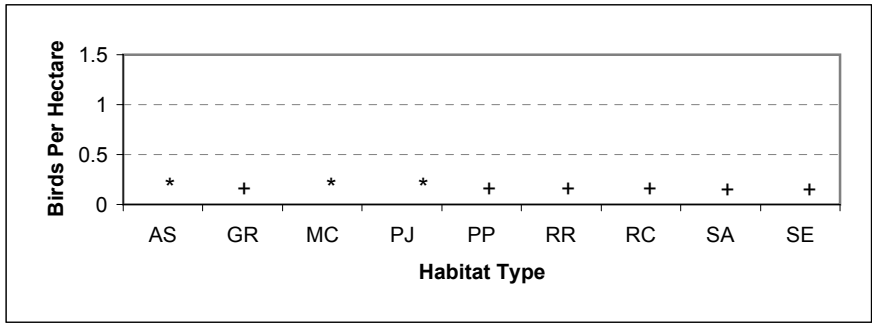


Density of Black-capped Chickadee amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert. * Detections of Black-capped Chickadee were insufficient (<20) to calculate density in this habitat type. + Black-capped Chickadee was not detected in this habitat type.

Mountain Chickadee -- Mountain Chicakdee was detected in low numbers in Aspen (n = 2), Mixed Conifer (n = 13), and Pinyon-juniper (n = 4) habitats.

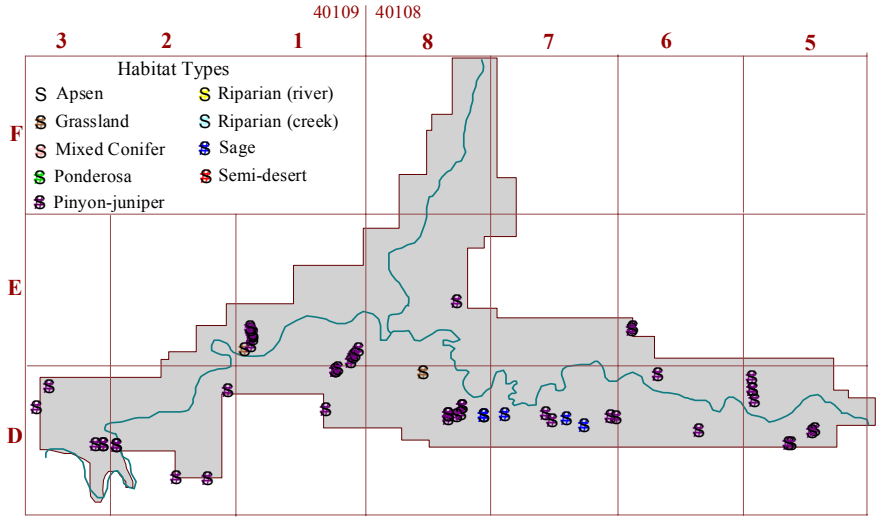


Distribution of Mountain Chickadee observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

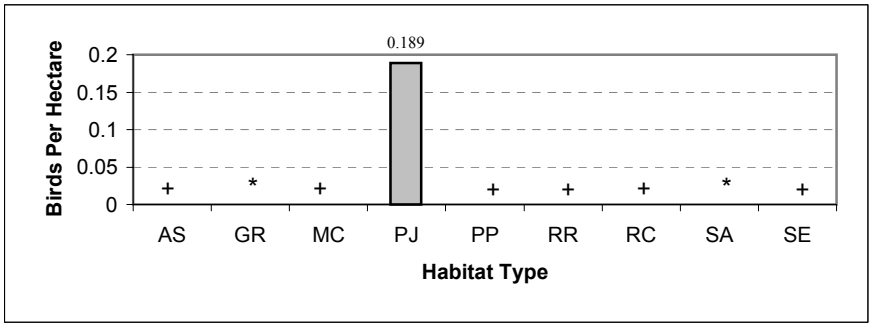


Density of Mountain Chickadee amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Mountain Chickadee were insufficient (<20) to calculate density in this habitat type. + Mountain Chickadee was not detected in this habitat type.

Juniper Titmouse -- Juniper Titmouse detections were sufficient to calculate density in Pinyon-juniper habitat (D = 0.189 birds per hectare). Juniper Titmouse was detected in low numbers in Grassland (n = 2) and Sage (n = 5) habitats.

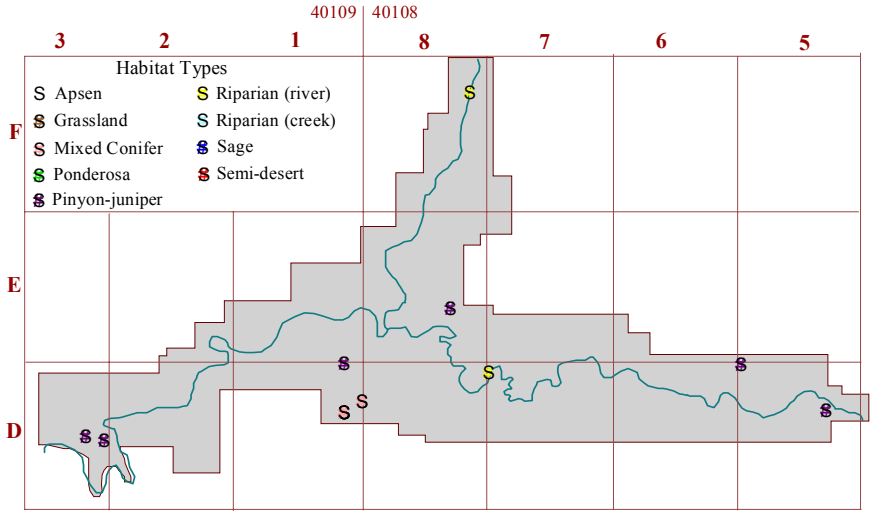


Distribution of Juniper Titmouse observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

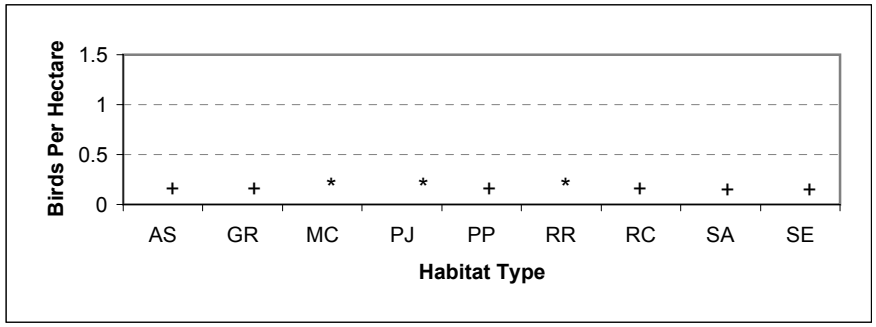


Density of Juniper Titmouse amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Juniper Titmouse were insufficient (<20) to calculate density in this habitat type. + Juniper Titmouse was not detected in this habitat type.

Bushtit -- Bushtit was detected in low numbers in Mixed Conifer (n = 8), Pinyon-juniper (n = 5), and Riparian (river) (n = 1) habitats.

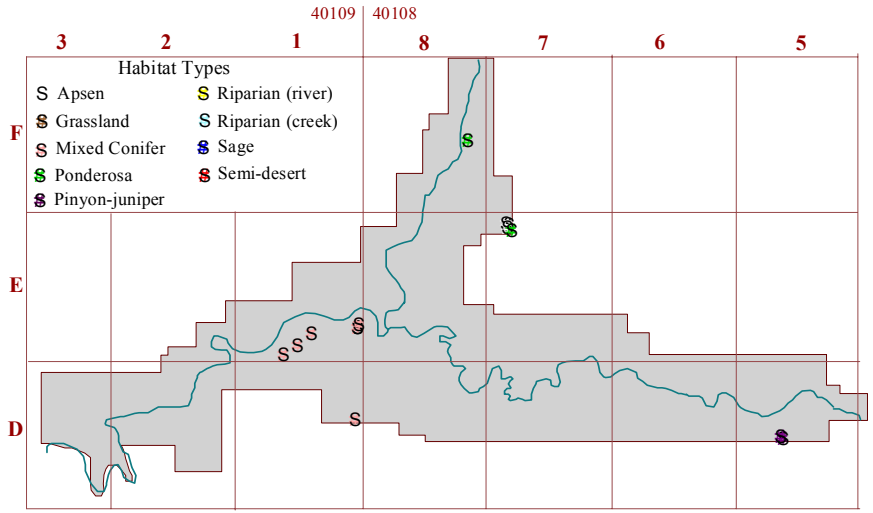


Distribution of Bushtit observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

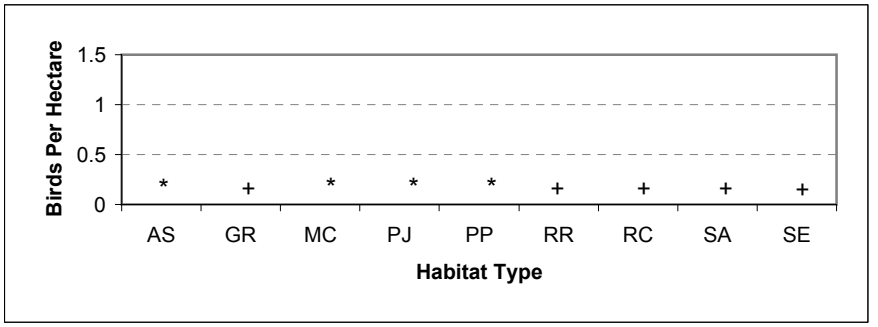


Density of Bushtit amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert. * Detections of Bushtit were insufficient (<20) to calculate density in this habitat type. + Bushtit was not detected in this habitat type.

Red-breasted Nuthatch-- Red-breasted Nuthatch was detected in low numbers in Aspen (n = 3), Mixed Conifer (n = 7), Pinyon-juniper (n = 2), and Ponderosa Pine (n = 3) habitats.

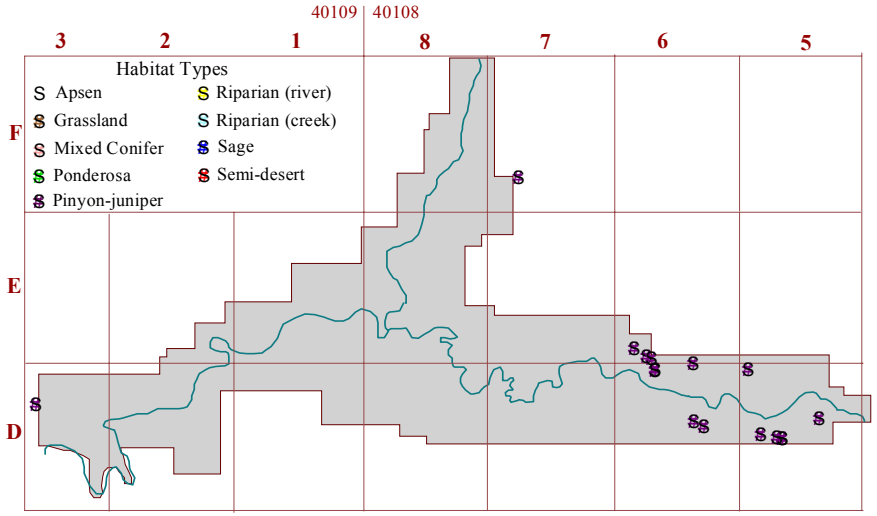


Distribution of Red-breasted Nuthatch observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

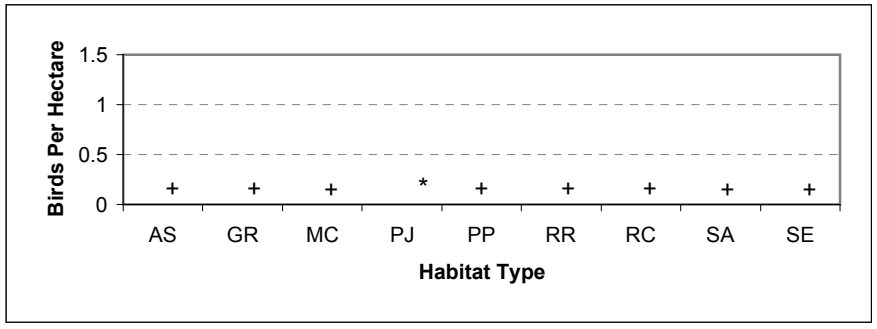


Density of Red-breasted Nuthatch amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert. * Detections of Red-breasted Nuthatch were insufficient (<20) to calculate density in this habitat type. + Red-breasted Nuthatch was not detected in this habitat type

White-breasted Nuthatch -- White-breasted Nuthatch was detected in low numbers in Pinyon-juniper habitat (n = 16).

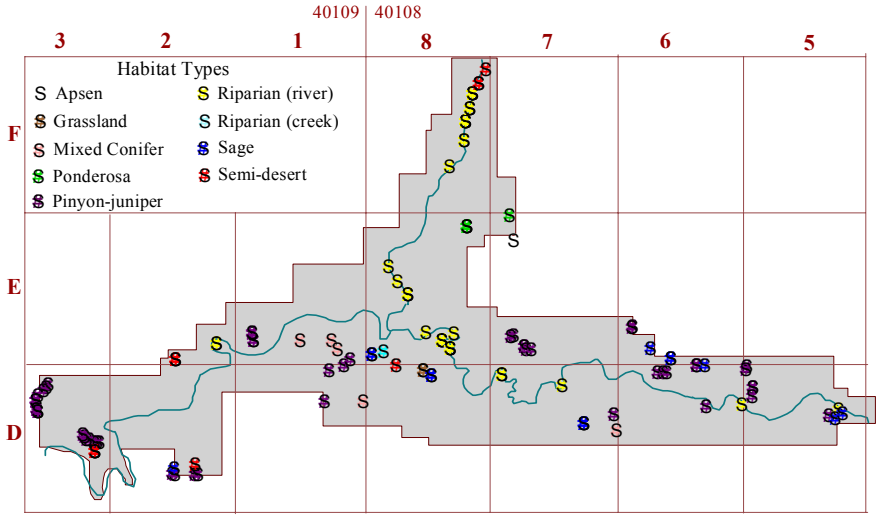


Distribution of White-breasted Nuthatch observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

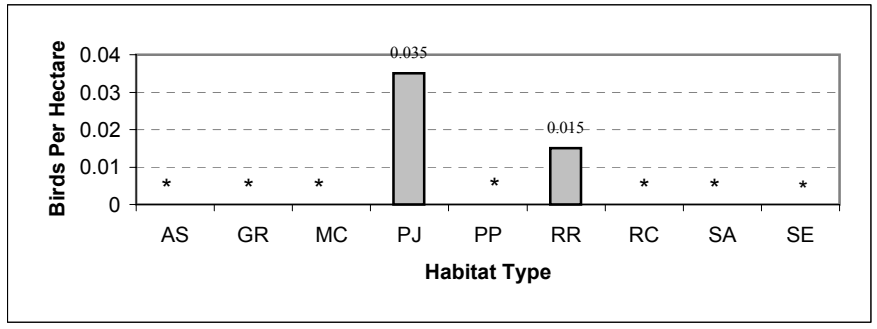


Density of White-breasted Nuthatch amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of White-breasted Nuthatch were insufficient (<20) to calculate density in this habitat type. + White-breasted Nuthatch was not detected in this habitat type.

Rock Wren -- Detections of Rock Wren were sufficient to calculate density in Pinyon-juniper (D = 0.035 birds per hectare) and Riparian (river) (D = 0.015 birds per hectare). Rock Wren was detected in low numbers in Aspen (n = 1), Grassland (n = 2), Mixed Conifer (n = 5), Ponderosa Pine (n = 5), Riparian (creek) (n = 1), Sage (n = 14), and Semi-desert (n = 12) habitats.

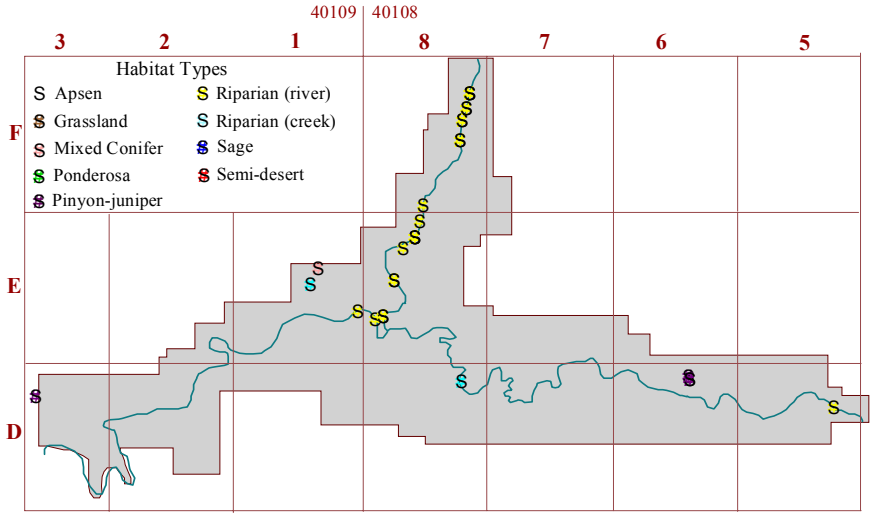


Distribution of Rock Wren observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

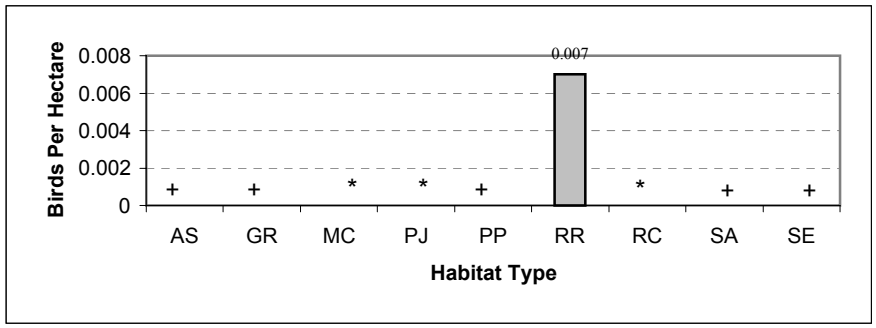


Density of Rock Wren amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Rock Wren were insufficient (<20) to calculate density in this habitat type. + Rock Wren was not detected in this habitat type.

Canyon Wren -- Detections of Canyon Wren were sufficient to calculate density in Riparian (creek) habitat (D = 0.007 birds per hectare). Canyon wren was detected in low numbers in Mixed Conifer (n = 1), Pinyon-juniper (n = 4), and Riparian (creek) (n = 2) habitats.

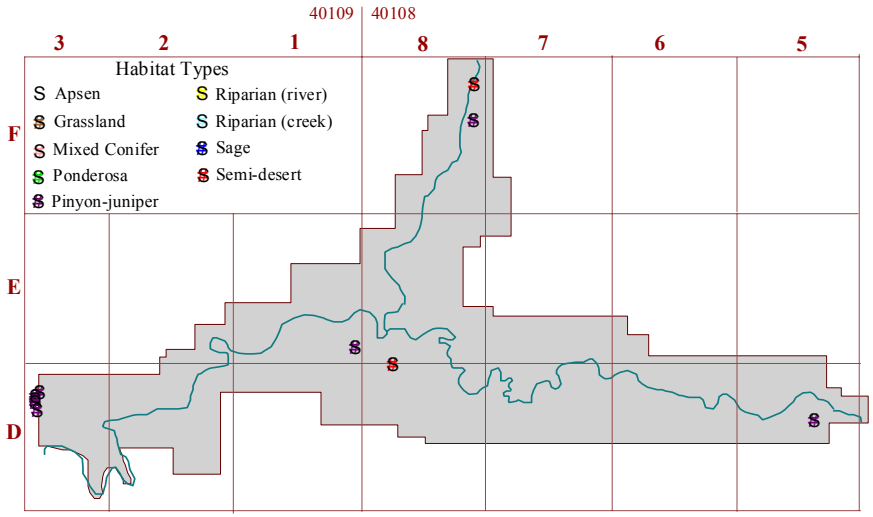


Distribution of Canyon Wren observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

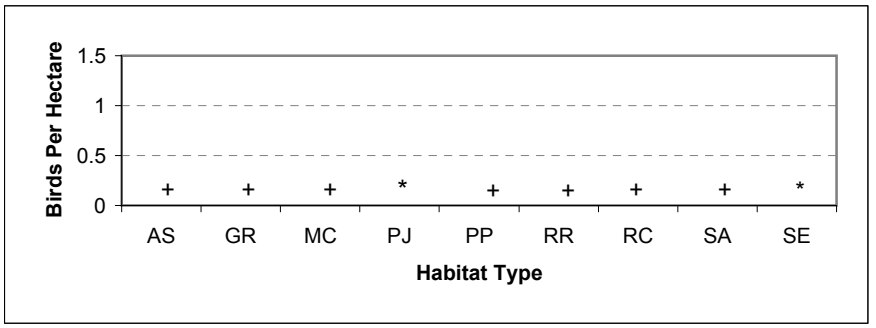


Density of Canyon Wren amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Canyon Wren were insufficient (<20) to calculate density in this habitat type. + Canyon Wren was not detected in this habitat type.

Bewick's Wren -- Bewick's Wren was detected in low numbers in Pinyon-juniper (n = 8) and Semi-desert habitats (n = 2).

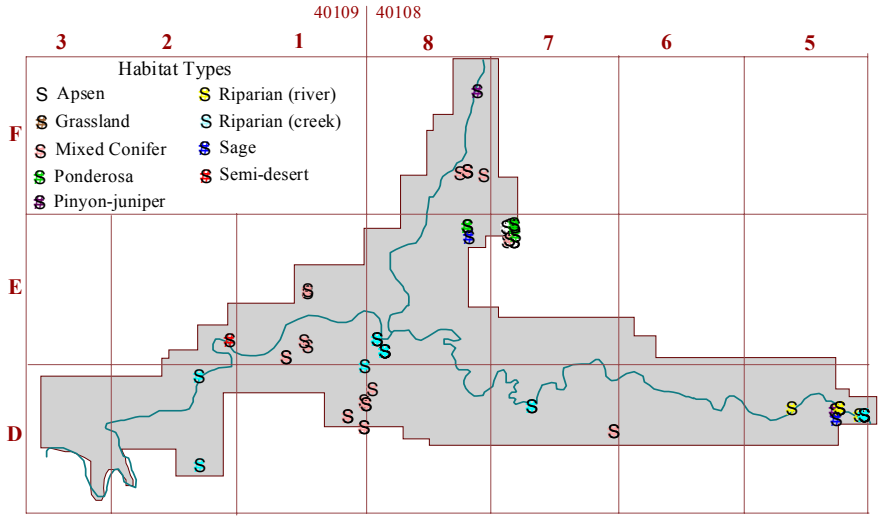


Distribution of Bewick's Wren observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

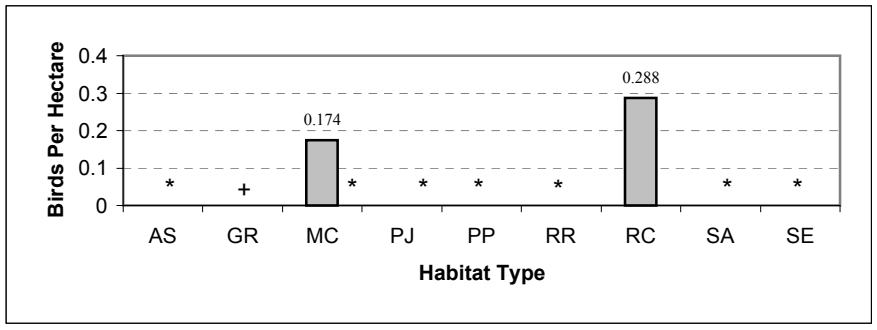


Density of Bewick's Wren amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Bewick's Wren were insufficient (<20) to calculate density in this habitat type. + Bewick's Wren was not detected in this habitat type.

House Wren -- Detections of House Wren were sufficient to calculate density in Mixed Conifer (*D* = 0.174 birds per hectare), and Riparian (creek) (*D* = 0.288 birds per hectare) habitats. House Wren was detected in low numbers in Aspen (n = 19), Pinyon-juniper (n = 2), Ponderosa Pine (n = 6), Riparian (river) (n = 5), Sage (n = 2), and Semi-desert (n = 1) habitats.

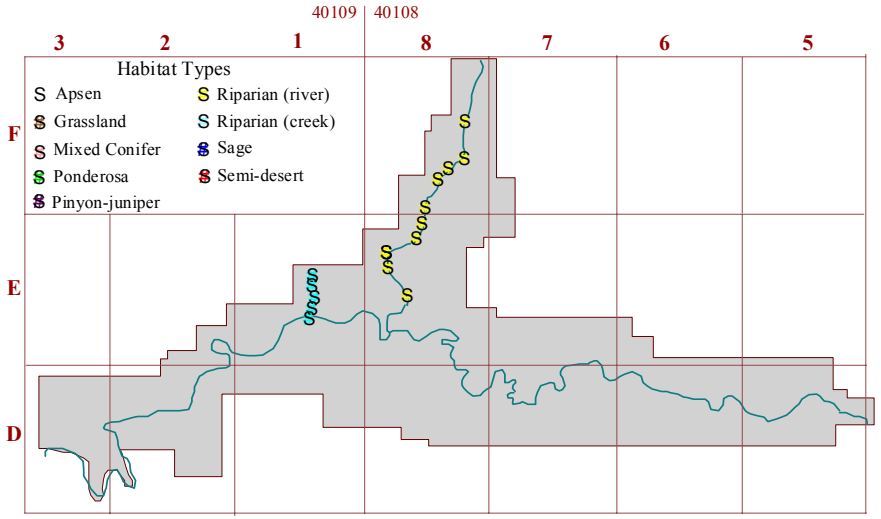


Distribution of House Wren observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

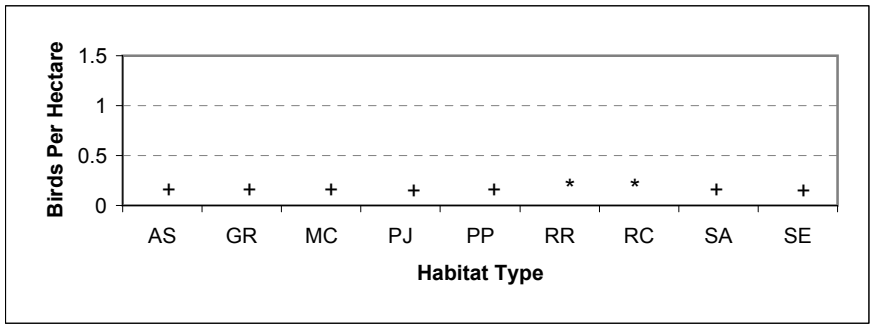


Density of House Wren amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of House Wren were insufficient (<20) to calculate density in this habitat type. + House Wren was not detected in this habitat type.

American Dipper -- American Dipper was detected in low numbers in Riparian (river) (n = 12) and Riparian (creek) (n = 5) habitats.

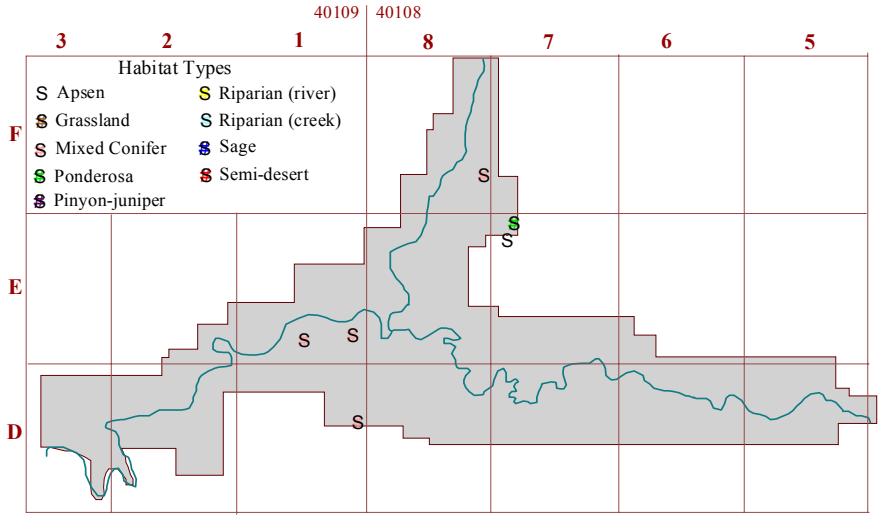


Distribution of American Dipper observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

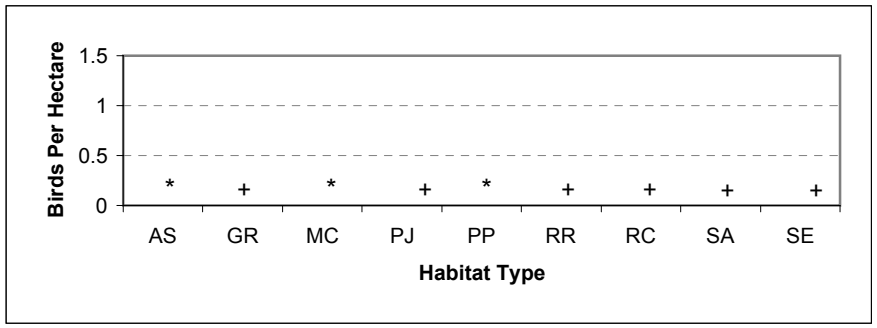


Density of American Dipper amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of American Dipper were insufficient (<20) to calculate density in this habitat type. + American Dipper was not detected in this habitat type.

Ruby-crowned Kinglet -- Ruby-crowned Kinglet was detected in low numbers in Aspen (n = 1), Mixed Conifer (n = 4), and Ponderosa Pine (n = 1) habitats.

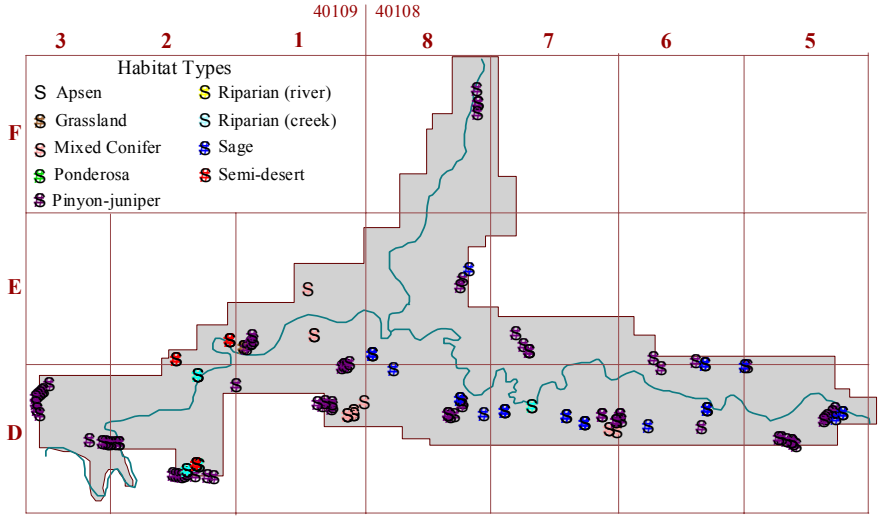


Distribution of Ruby-crowned Kinglet observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

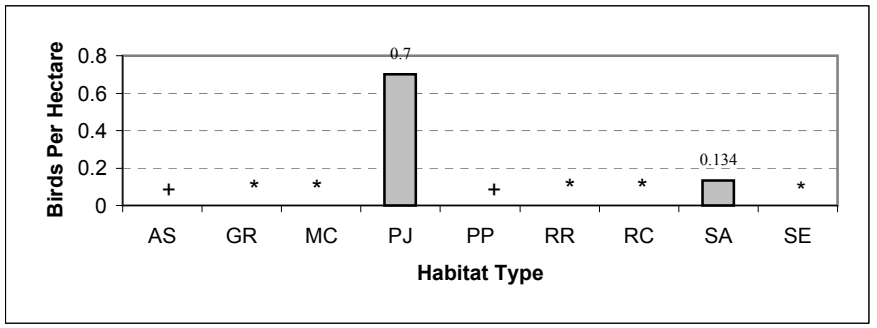


Density of Ruby-crowned Kinglet amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Ruby-crowned Kinglet were insufficient (<20) to calculate density in this habitat type. + Ruby-crowned Kinglet was not detected in this habitat type.

Blue-gray Gnatcatcher -- Detections of Blue-gray Gnatcatcher were sufficient to calculate density in Pinyon-juniper (D = 0.700 birds per hectare), and Sage (D = 0.134 birds per hectare). Blue-gray Gnatchatcher was detected in low numbers in Grassland (n = 3), Mixed Conifer (n = 14), Riparian (river) (n = 10), Riparian (creek) (n = 6), and Semi-desert (n = 2) habitats.

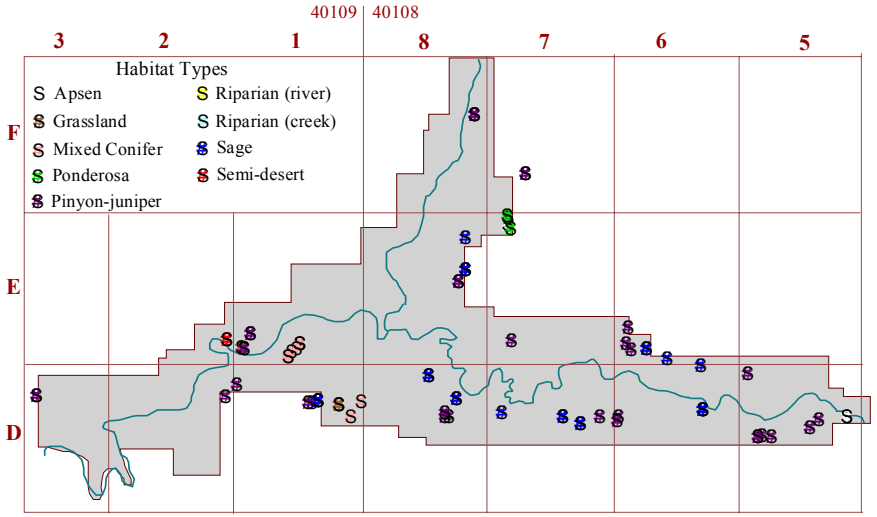


Distribution of Blue-gray Gnatcatcher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

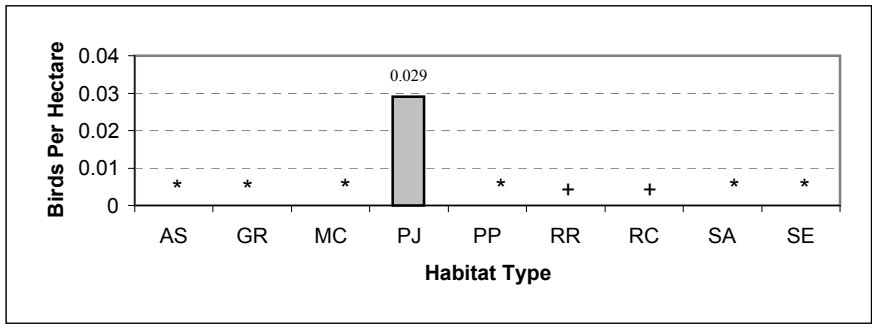


Density of Blue-gray Gnatcatcher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Blue-gray Gnatcatcher were insufficient (<20) to calculate density in this habitat type. + Blue-gray Gnatcatcher was not detected in this habitat type.

Mountain Bluebird -- Detections of Mountain Bluebird were sufficient to calculate density in Pinyon-juniper habitat (D = 0.029 birds per hectare). Mountain Bluebird was detected in low numbers in Aspen (n = 4), Grassland (n = 5), Mixed Conifer (n = 9), Ponderosa Pine (n = 3), and semi-desert (n = 2) habitats.

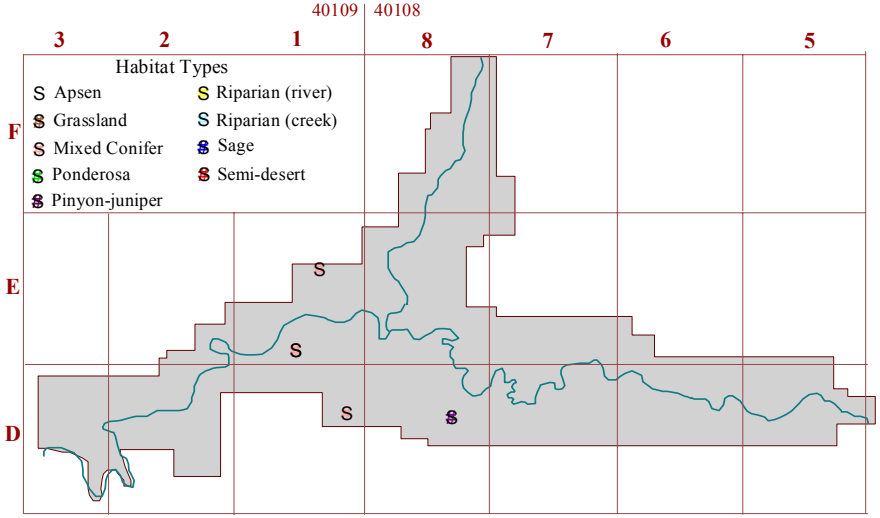


Distribution of Mountain Bluebird observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

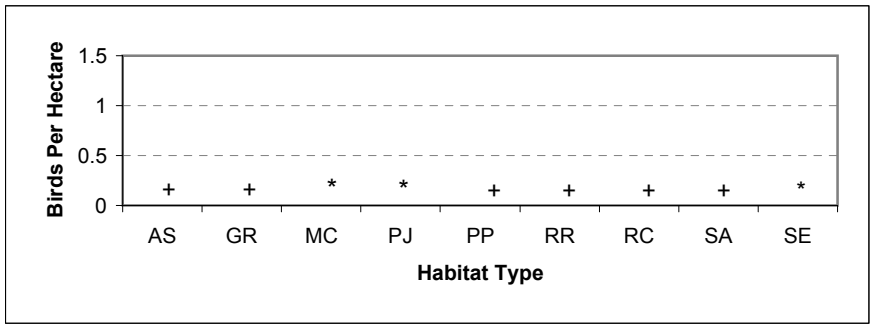


Density of Mountain Bluebird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Mountain Bluebird were insufficient (<20) to calculate density in this habitat type. + Mountain Bluebird was not detected in this habitat type.

Townsend's Solitaire -- Townsend's Solitaire was detected in low numbers in Mixed Conifer (n = 4), and Pinyon-juniper (n = 1) habitats.

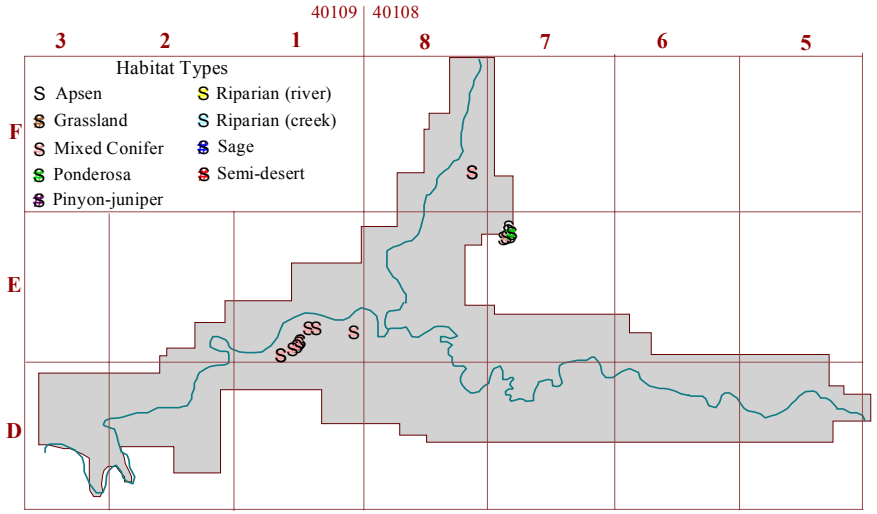


Distribution of Townsend's Solitaire observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

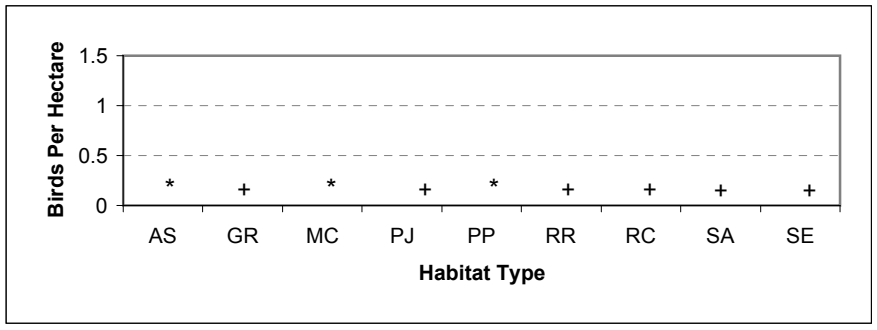


Density of Townsend's Solitaire amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Townsend's Solitaire were insufficient (<20) to calculate density in this habitat type. + Townsend's Solitaire was not detected in this habitat type.

Hermit Thrush -- Hermit Thrush was detected in low numbers in Aspen (n = 5), Mixed Conifer (n = 13), and Ponderosa (n = 1) habitats.

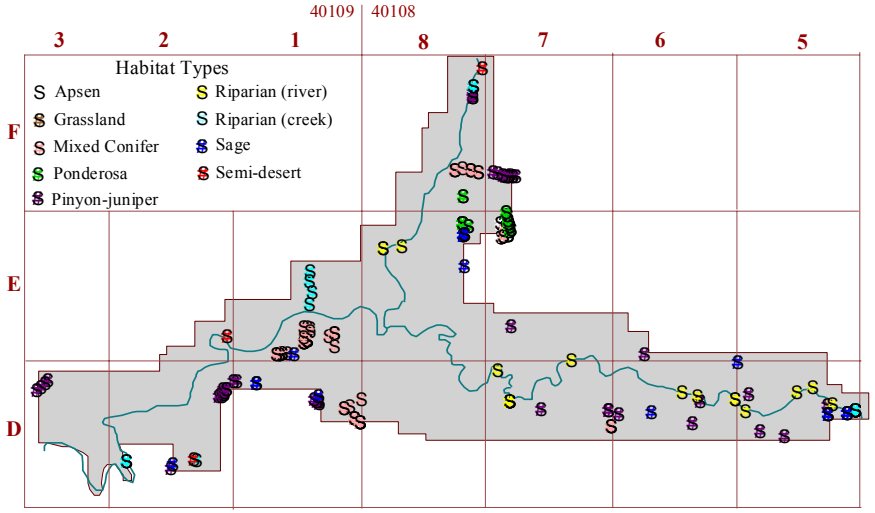


Distribution of Hermit Thrush observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

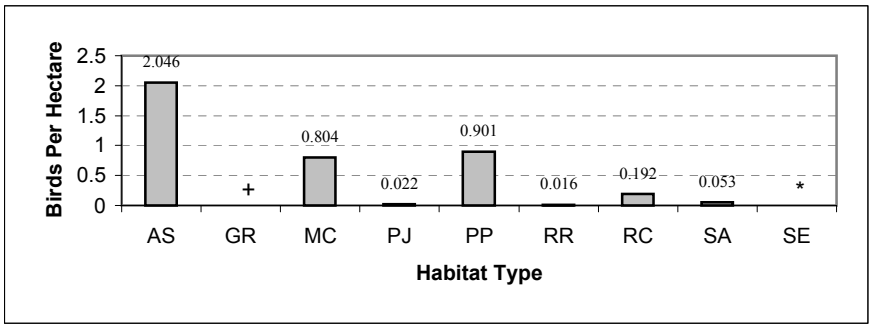


Density of Hermit Thrush amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Hermit Thrush were insufficient (<20) to calculate density in this habitat type. + Hermit Thrush was not detected in this habitat type.

American Robin -- Detections of American Robin were sufficient to calculate density in Aspen (D 2.046 birds per hectare), Mixed Conifer (D = 0.804 birds per hectare), Pinyon-juniper (D = 0.022 birds per hectare), Ponderosa Pine (D = 0.901 birds per hectare), Riparian (river) (D = 0.016 birds per hectare), Riparian (creek) (D = 0.192 birds per hectare), and Sage (D = 0.053 birds per hectare) habitats. American Robin was detected in low numbers in Semi-desert habitat (n = 3).

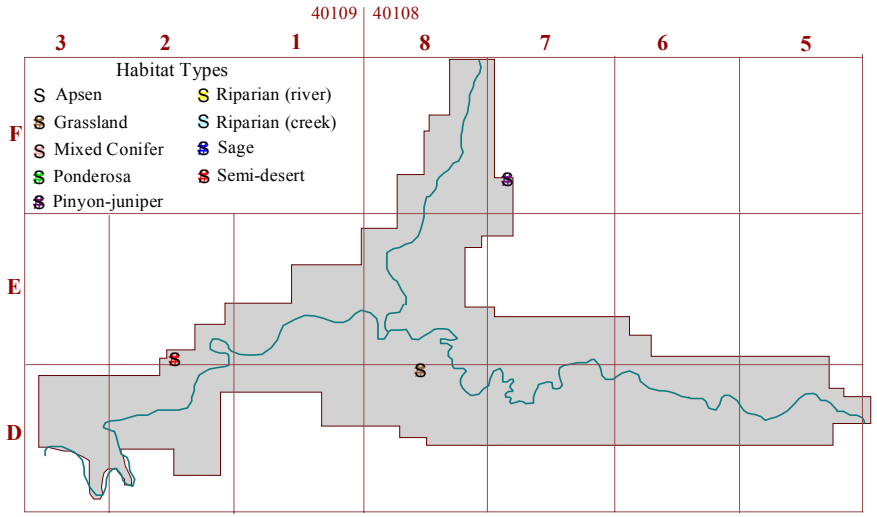


Distribution of American Robin observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

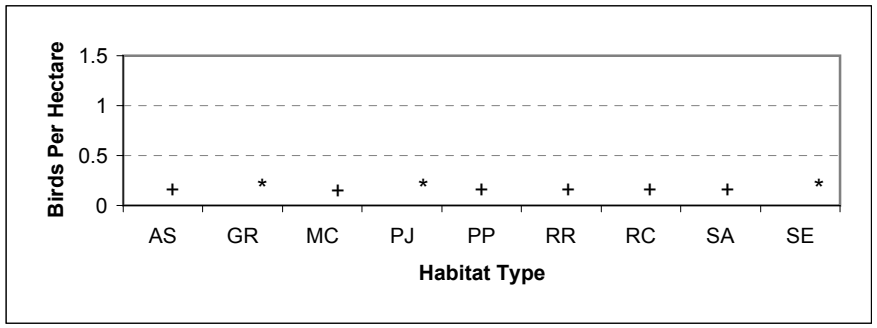


Density of American Robin amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of American Robin were insufficient (<20) to calculate density in this habitat type. + American Robin was not detected in this habitat type.

Northern Mockingbird -- Northern Mockingbird was detected in low numbers in Grassland (n = 1), Pinyon-juniper (n = 1), and Semi-desert (n = 1) habitats

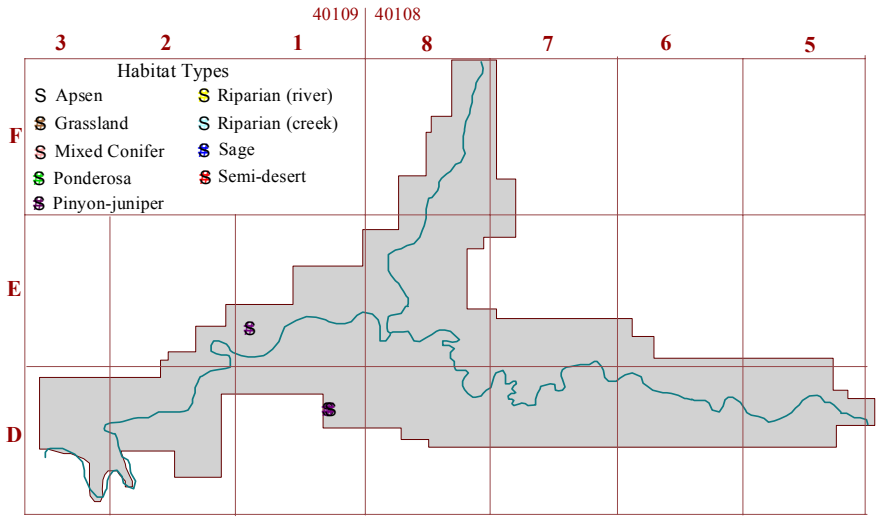


Distribution of Northern Mockingbird observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

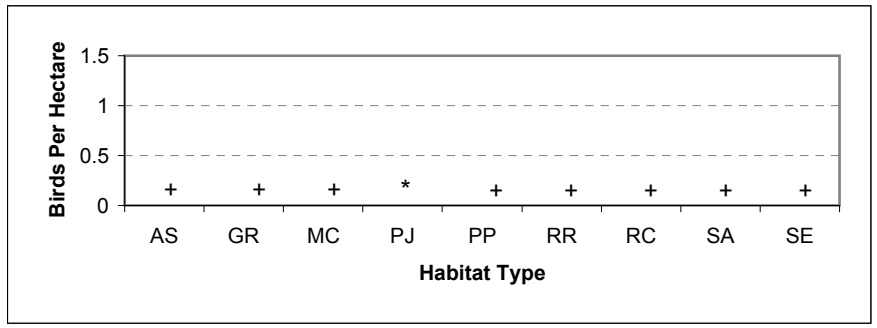


Density of Northern Mockingbird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Northern Mockingbird were insufficient (<20) to calculate density in this habitat type. + Northern Mockingbird was not detected in this habitat type.

Sage Thrasher -- Sage Thrasher was detected in low numbers in Pinyon-juniper habitat (n = 3).

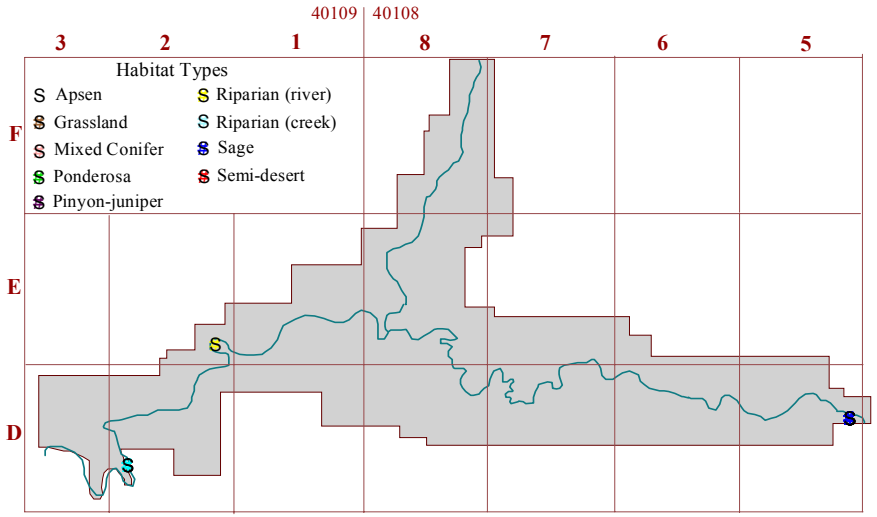


Distribution of Sage Thrasher observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

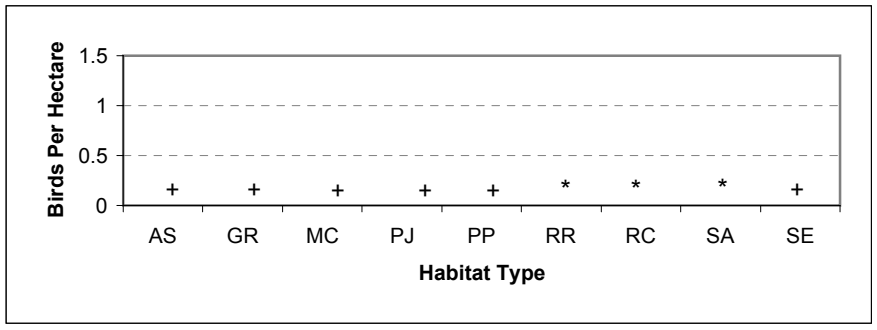


Density of Sage Thrasher amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Sage Thrasher were insufficient (<20) to calculate density in this habitat type. + Sage Thrasher was not detected in this habitat type.

European Starling -- European Starling was detected in low numbers in Riparian (river) (n = 1), Riparian (creek) (n = 4), and Sage (n = 12) habitats.

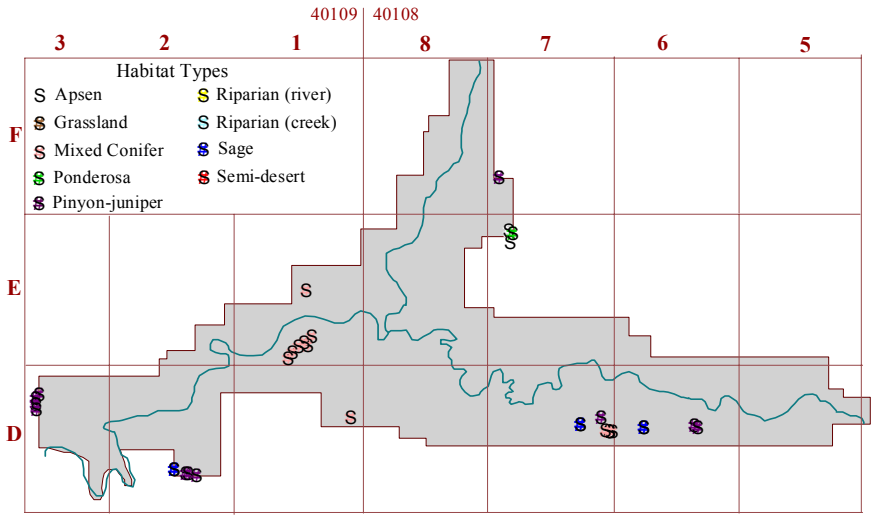


Distribution of European Starling observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

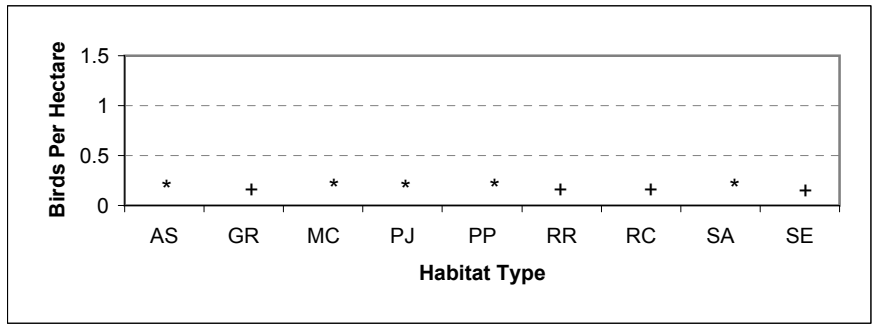


Density of European Starling amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of European Starling were insufficient (<20) to calculate density in this habitat type. + European Starling was not detected in this habitat type.

Virginia's Warbler -- Virginia's Warbler was detected in low numbers in Aspen (n = 2), Mixed Conifer (n = 13), Pinyon-juniper (n = 11), Ponderosa Pine (n = 1), and Sage (n = 6) habitats.

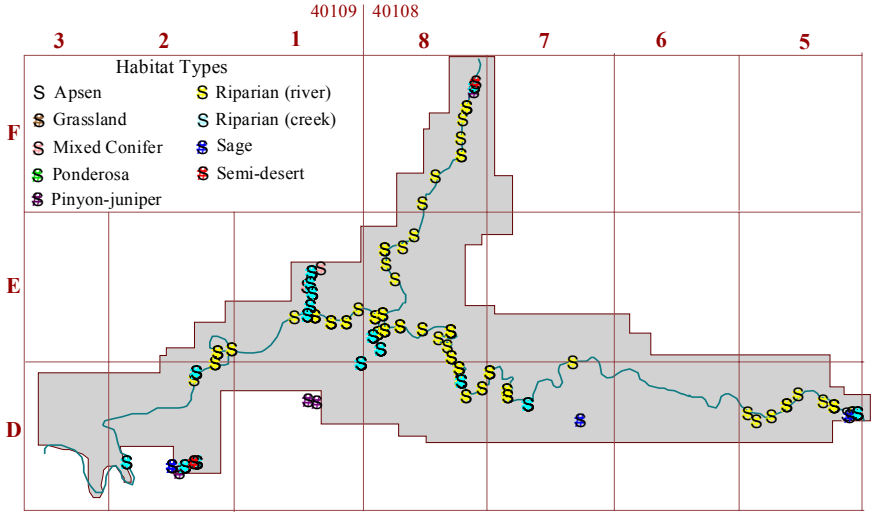


Distribution of Virginia's Warbler observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

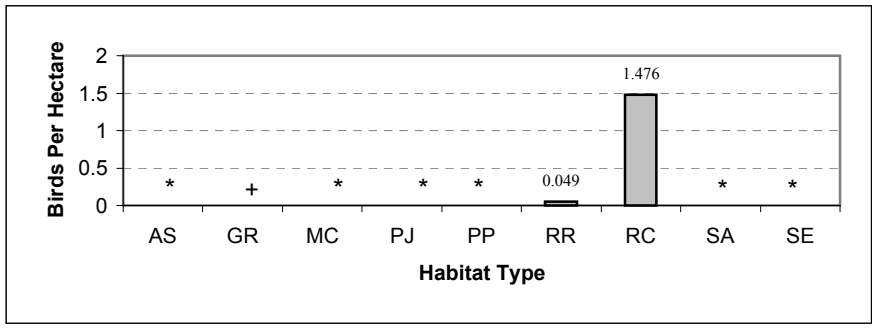


Density of Virginia's Warbler amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Virginia's Warbler were insufficient (<20) to calculate density in this habitat type. + Virginia's Warbler was not detected in this habitat type.

Yellow Warbler -- Detections of Yellow Warbler were sufficient to calculate density in Riparian (river) (D = 0.049 birds per hectare), and Riparian (creek) (D = 1.476 birds per hectare) habitats. Yellow Warbler was detected in low numbers in Aspen (n = 1), Mixed Conifer (n = 4), Pinyon-juniper (n = 4), Sage (n = 5), and Semi-desert (n = 3) habitats.

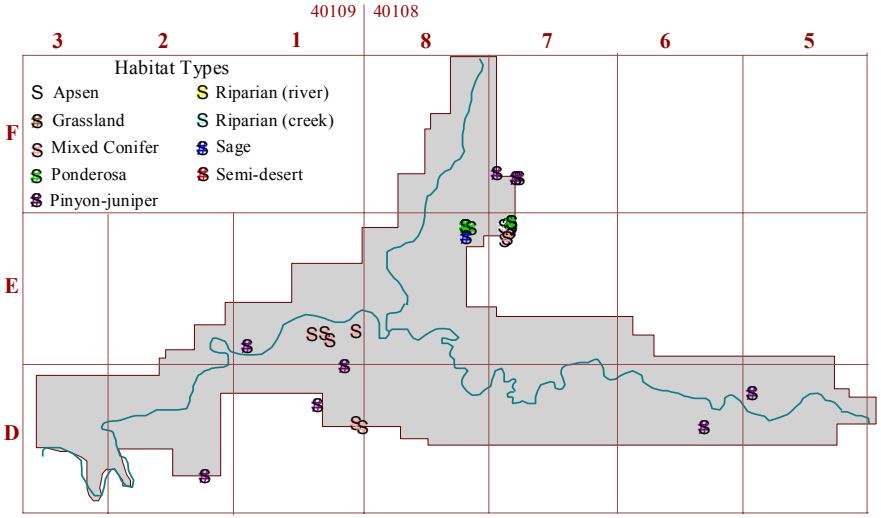


Distribution of Yellow Warbler observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

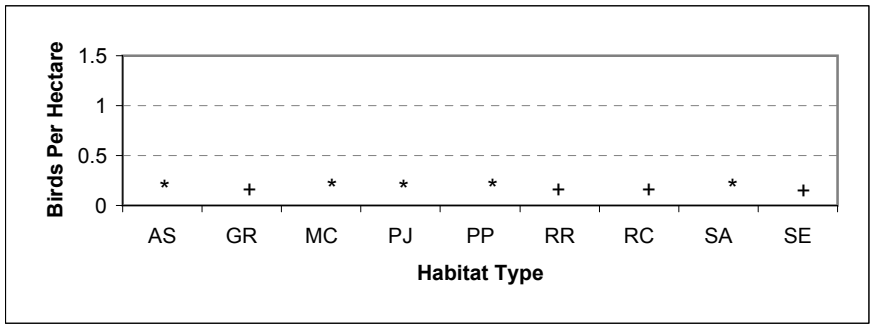


Density of Yellow Warbler amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Yellow Warbler were insufficient (<20) to calculate density in this habitat type. + Yellow Warbler was not detected in this habitat type.

Audubon's Warbler -- Audubon's Warbler was detected in low numbers Aspen (n = 11), Mixed Conifer (n = 8), Pinyon-juniper (n = 9), Ponderosa Pine (n = 11), and Sage (n = 1) habitats.

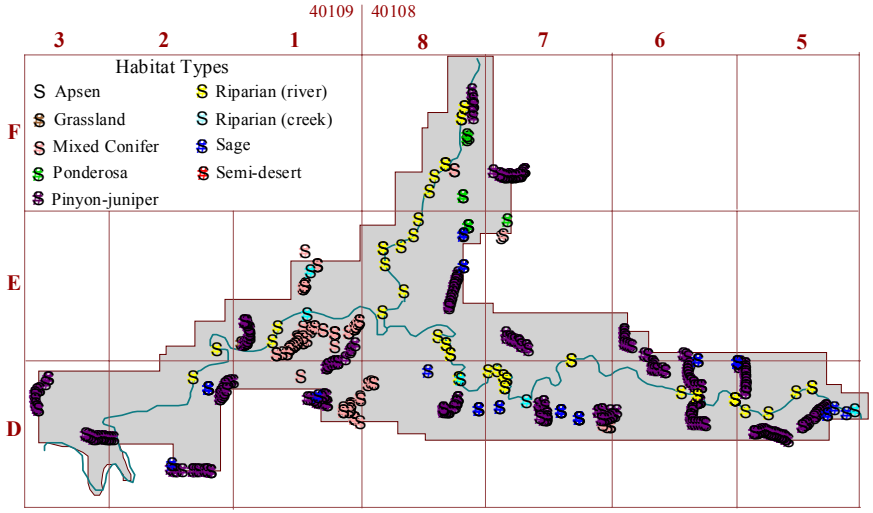


Distribution of Audubon's Warbler observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

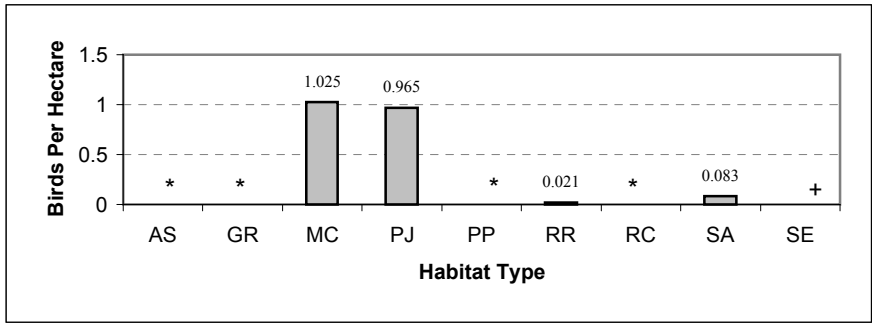


Density of Audubon's Warbler amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Audubon's Warbler were insufficient (<20) to calculate density in this habitat type. + Audubon's Warbler was not detected in this habitat type.

Black-throated Gray Warbler -- Detections of Black-throated Gray Warbler were sufficient to calculate density in Mixed Conifer (D = 1.025 birds per hectare), Pinyon-juniper (D = 0.965 birds per hectare), Riparian (river) (D = 0.021 birds per hectare), and Sage (D = 0.083 birds per hectare) habitats. Black-throated Gray Warbler was detected in low numbers in Aspen (n = 1), Grassland (n = 1), Ponderosa Pine (n = 11), and Riparian (creek) (n = 5) habitats.

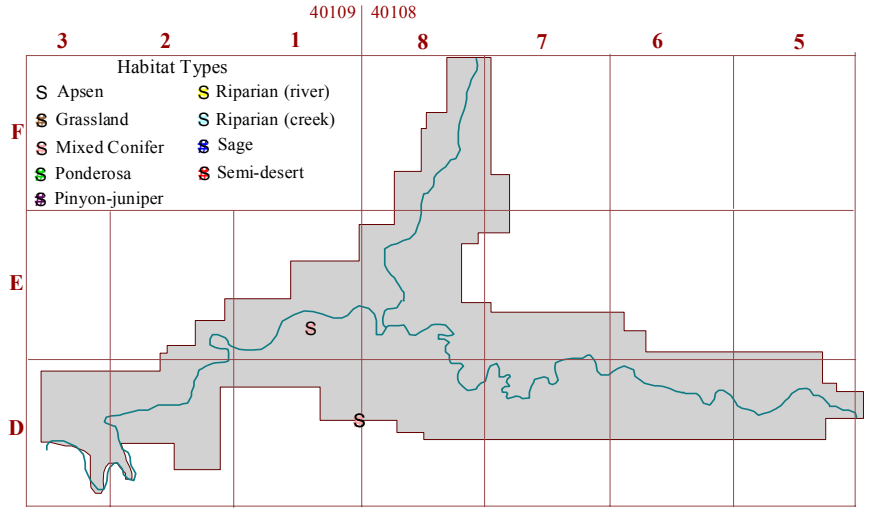


Distribution of Black-throated Gray Warbler observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

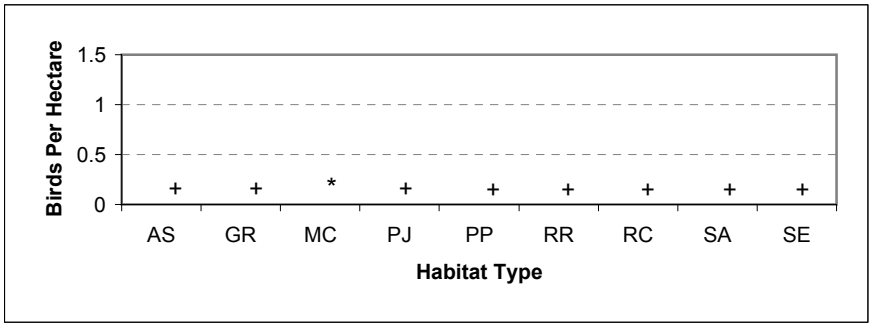


Density of Black-throated Gray warbler amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP= Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Black-throated Gray Warbler were insufficient (<20) to calculate density in this habitat type. + Black-throated Gray Warbler was not detected in this habitat type.

MacGillivray's Warbler -- MacGillivray's Warbler was detected in low numbers in Mixed Conifer habitat (n = 3).

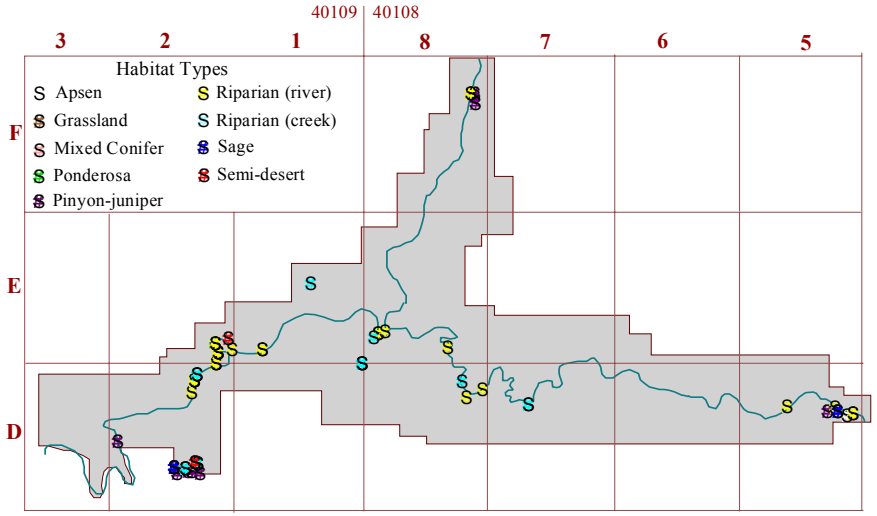


Distribution of MacGillivray's Warbler observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

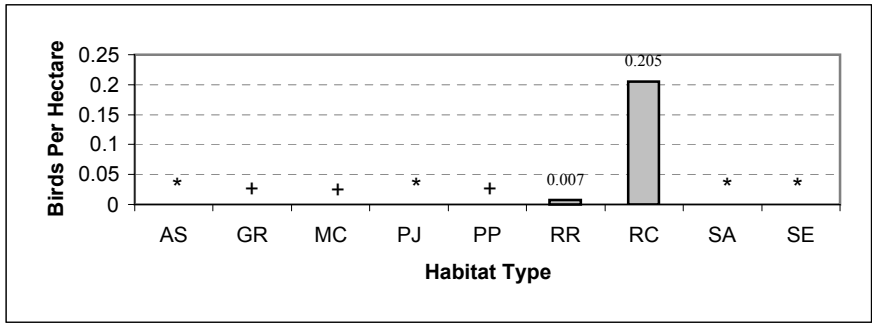


Density of MacGillivray's Warbler amongst habitat types in Dinosaur National Monument AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of MacGillivray's Warbler were insufficient (<20) to calculate density in this habitat type. + MacGillivray's Warbler was not detected in this habitat type.

Yellow-breasted Chat -- Detections of Yellow-breasted Chat were sufficient to calculate density in Riparian (river) (D = 0.007 birds per hectare), and Riparian (creek) (D = 0.205 birds per hectare) habitats. Yellow-breasted Chat was detected in low numbers in Aspen (n = 1), Pinyon-juniper (n = 9), Sage (n = 5), and Semi-desert (n = 3) habitats.

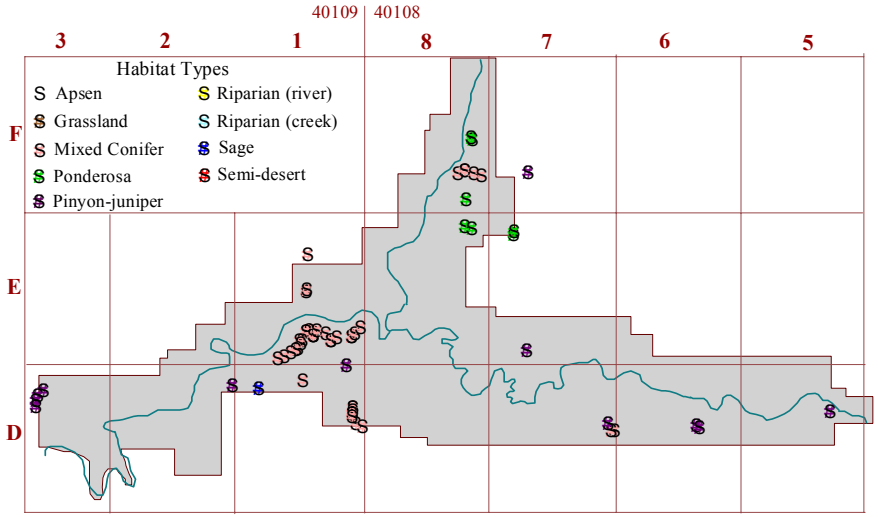


Distribution of Yellow-breasted Chat observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

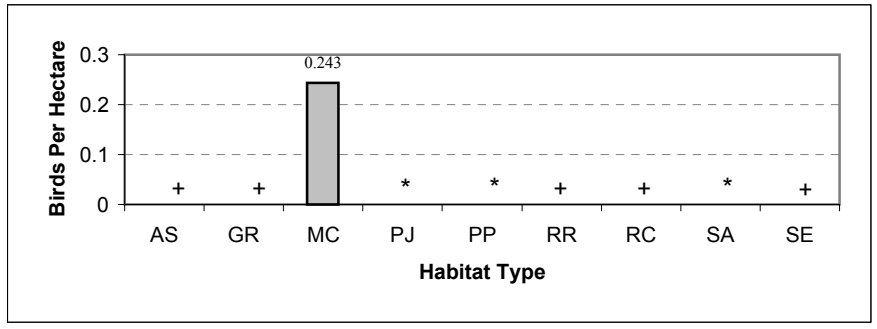


Density of Yellow-breasted Chat amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Yellow-breasted Chat were insufficient (<20) to calculate density in this habitat type. + Yellow-breasted Chat was not detected in this habitat type.

Western Tanager -- Detections of Western Tanager were sufficient to calculate density in Mixed Conifer habitat (D = 0.243 birds per hectare). Western Tanager was detected in low numbers in Pinyon-juniper (n = 12), Ponderosa (n = 7), and Sage (n = 1) habitats.

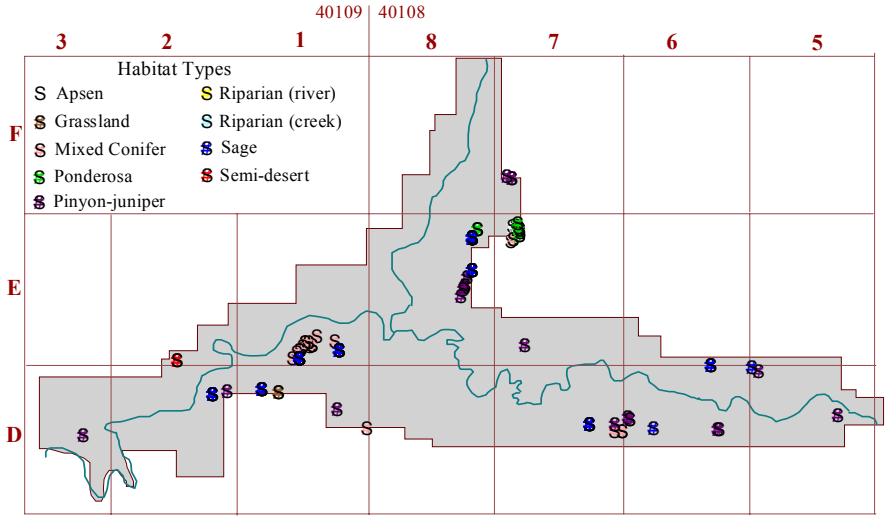


Distribution of Western Tanager observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

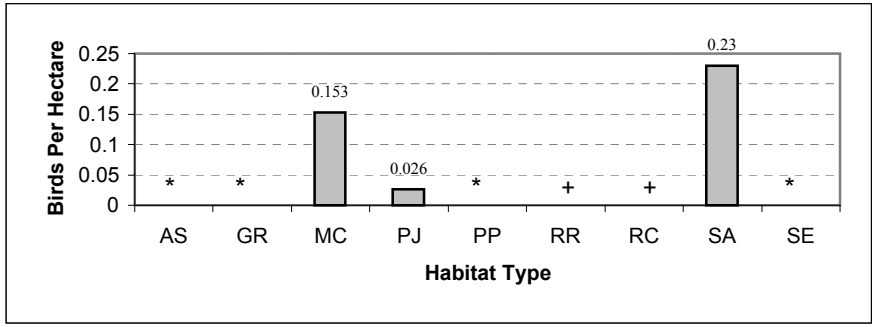


Density of Western Tanager amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Western Tanager were insufficient (<20) to calculate density in this habitat type. + Western Tanager was not detected in this habitat type.

Green-tailed Towhee -- Detections of Green-tailed Towhee were sufficient to calculate density in Mixed Conifer (D = 0.153 birds per hectare), Pinyon-juniper (D = 0.026 birds per hectare), and Sage (D = 0.230 birds per hectare) habitats. Green-tailed Towhee was detected in low numbers in Aspen (n = 5), Grassland (n = 2), Ponderosa Pine (n = 13), and Semi-desert (n = 2) habitats.

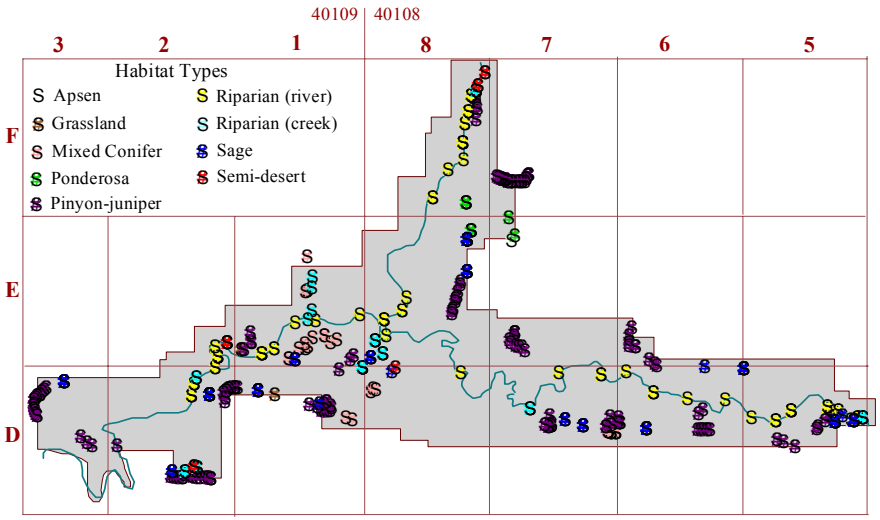


Distribution of Green-tailed Towhee observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

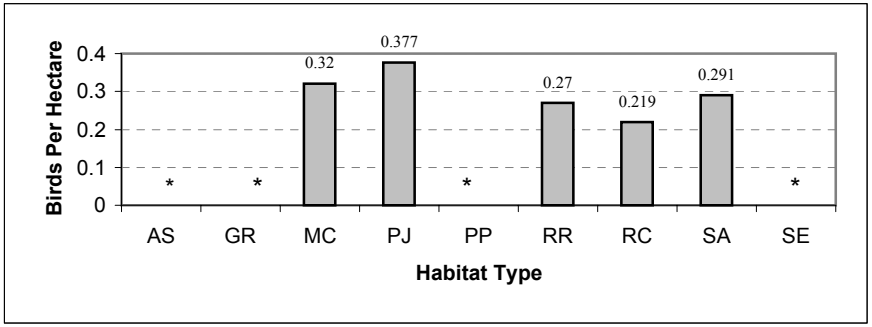


Density of Green-tailed Towhee amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Green-tailed Towhee were insufficient (<20) to calculate density in this habitat type. + Green-tailed Towhee was not detected in this habitat type.

Spotted Towhee -- Detections of Spotted Towhee were sufficient to calculate density in Mixed Conifer (D = 0.320 birds per hectare), Pinyon-juniper (D = 0.377 birds per hectare), Riparian (river) (D = 0.270 birds per hectare), Riparian (creek) (D = 0.219 birds per hectare), and Sage (D = 0.291 birds per hectare). Spotted Towhee was detected in low numbers in Aspen (n = 2) Grassland (n = 4), Ponderosa Pine (n= 13), and Semi-desert (n = 12) habitats.

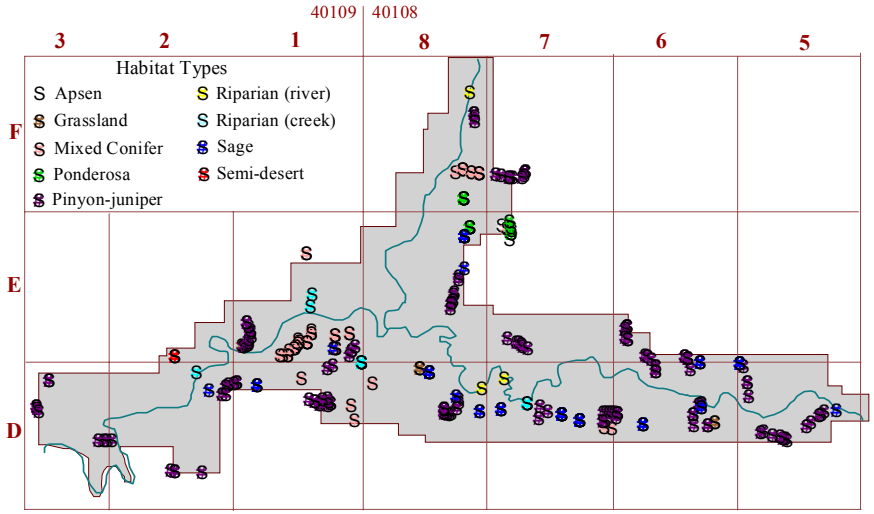


Distribution of Spotted Towhee observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

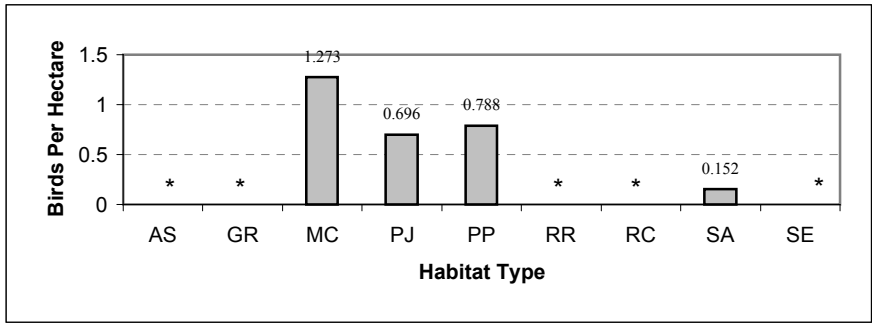


Density of Spotted Towhee amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Spotted Towhee were insufficient (<20) to calculate density in this habitat type. + Spotted Towhee was not detected in this habitat type.

Chipping Sparrow -- Detections of Chipping Sparrow were sufficient to calculate density in Mixed Conifer (D = 1.273 birds per hectare), Pinyon-juniper (D = 0.696 birds per hectare), Ponderosa Pine (D = 0.788 birds per hectare), and Sage (D = 0.152 birds per hectare) habitats. Chipping Sparrow was detected in low numbers in Aspen (n = 3), Grassland (n = 6), Riparian (river) (n = 3), Riparian (creek) (n = 15), and Semi-desert (n = 3) habitats.

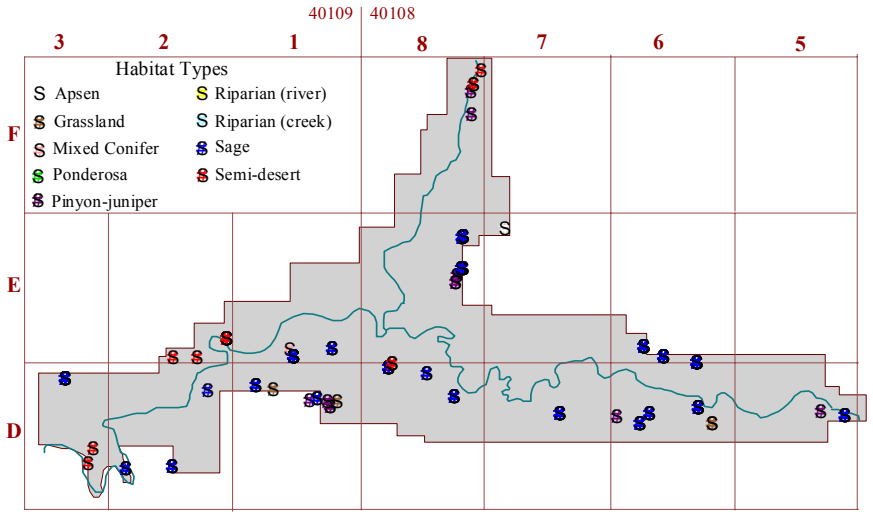


Distribution of Chipping Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

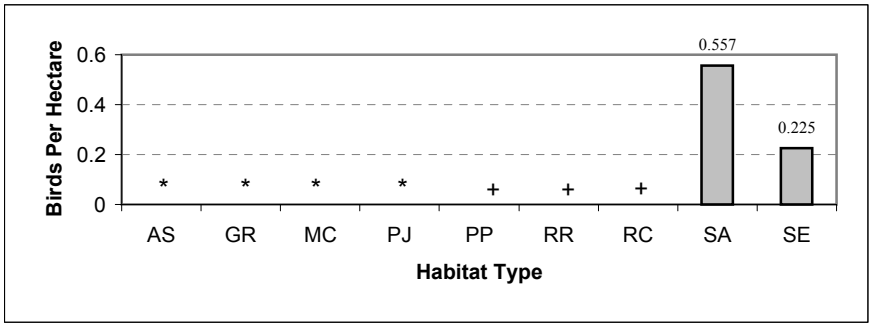


Density of Chipping Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Chipping Sparrow were insufficient (<20) to calculate density in this habitat type. + Chipping Sparrow was not detected in this habitat type.

Brewer's Sparrow -- Detections of Brewer's Sparrow were sufficient to calculate density in Sage (D = 0.557 birds per hectare) and Semi-desert (D = 0.225 birds per hectare). Brewer's Sparrow was detected in low numbers in Aspen (n = 1), Grassland (n = 4), Mixed Conifer (n = 1), and Pinyon-juniper (n = 12) habitats.

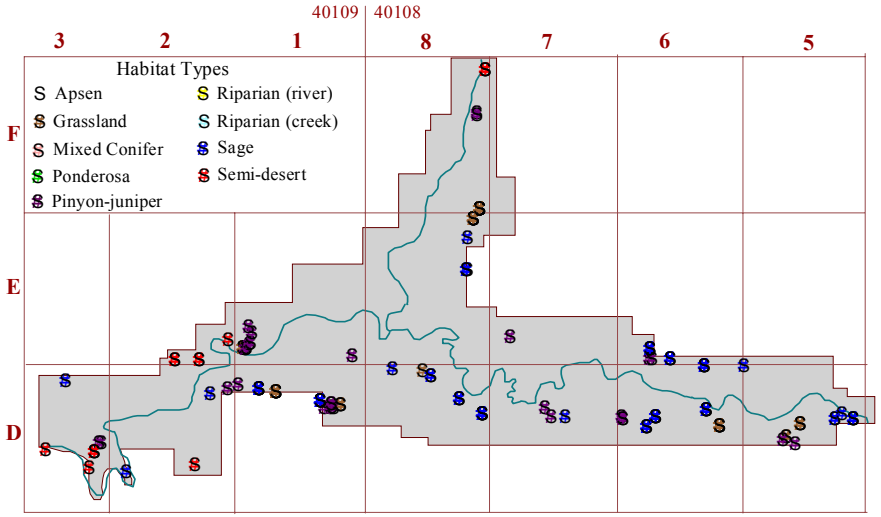


Distribution of Brewer's Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

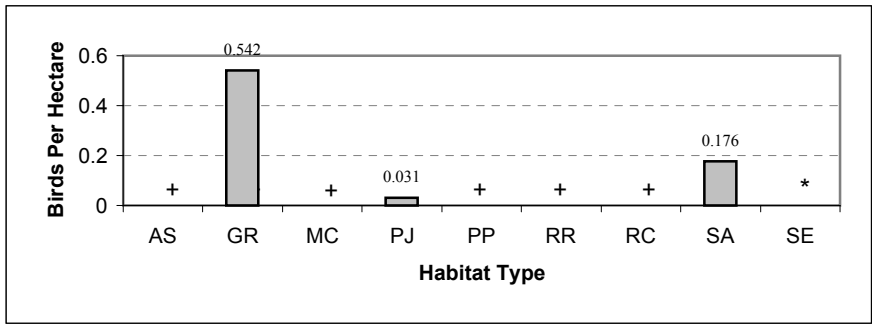


Density of Brewer's Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Brewer's Sparrow were insufficient (<20) to calculate density in this habitat type. + Brewer's Sparrow was not detected in this habitat type.

Vesper Sparrow -- Detections of Vesper Sparrow were sufficient to calculate density in Grassland (D = 0.542 birds per hectare), Pinyon-juniper (D = 0.031 birds per hectare), and Sage (D = 0.176 birds per hectare) habitats. Vesper Sparrow was detected in low numbers in Semi-desert habitat (n = 14).

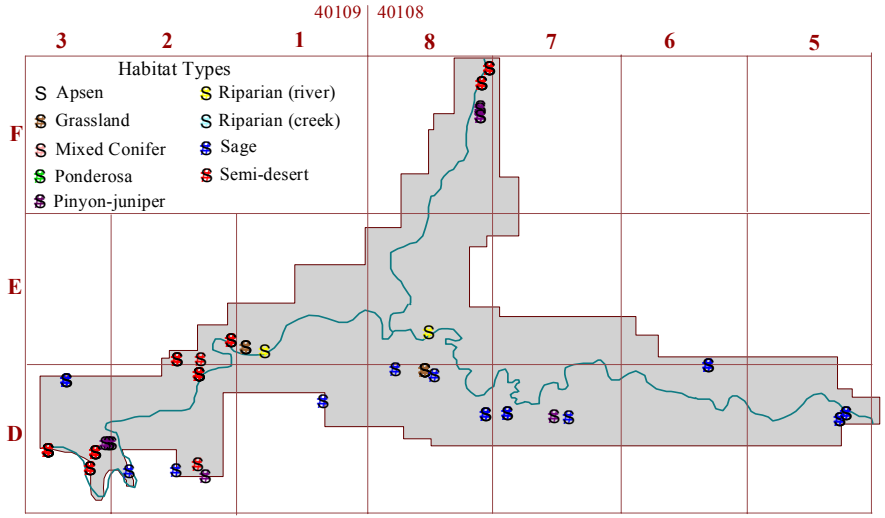


Distribution of Vesper Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

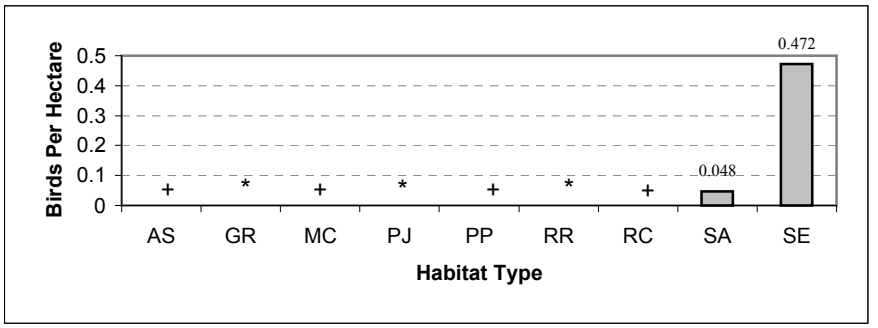


Density of Vesper Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Vesper Sparrow were insufficient (<20) to calculate density in this habitat type. + Vesper Sparrow was not detected in this habitat type.

Lark Sparrow -- Detections of Lark Sparrow were sufficient to calculate density in Sage (D = 0.048 birds per hectare) and Semi-desert (D = 0.472 birds per hectare) habitats. Lark Sparrow was detected in low numbers in Grassland (n = 9), Pinyon-juniper (n = 10), and Riparian (river) (n = 2) habitats.

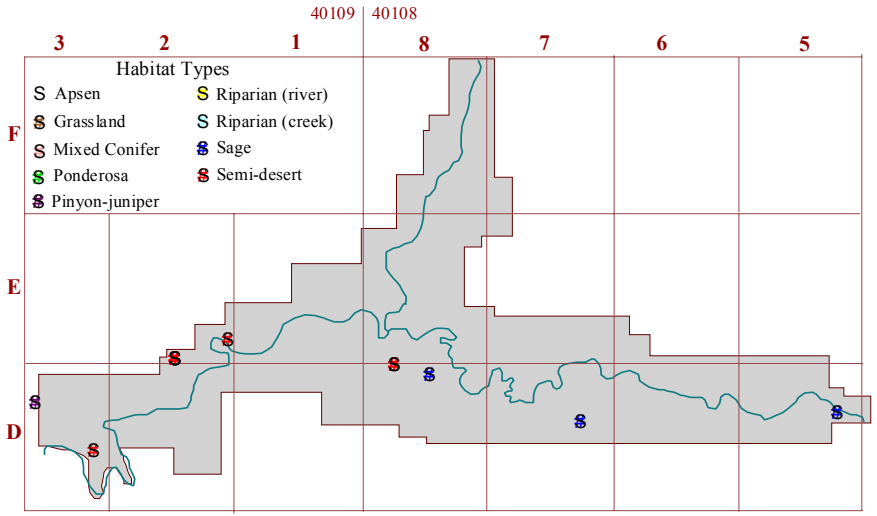


Distribution of Lark Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

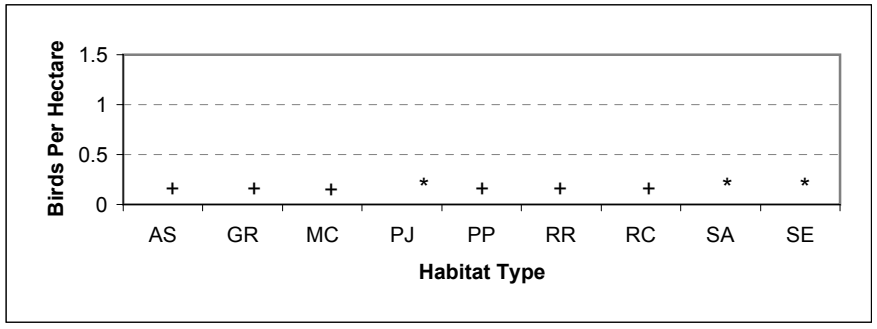


Density of Lark Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Lark Sparrow were insufficient (<20) to calculate density in this habitat type. + Lark Sparrow was not detected in this habitat type.

Black-throated Sparrow -- Black-throated Sparrow was detected in low numbers in Pinyon-juniper (n = 1), Sage (n = 3), and Semi-desert (n = 10) habitats.

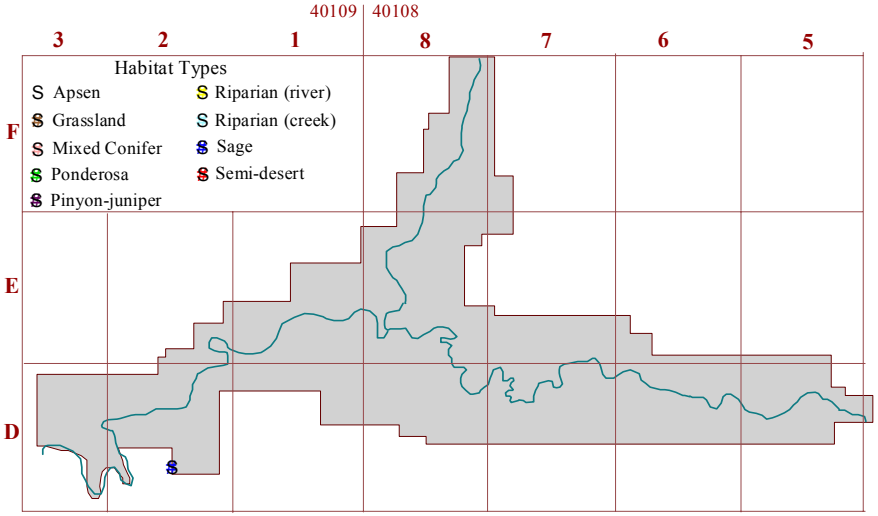


Distribution of Black-throated Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

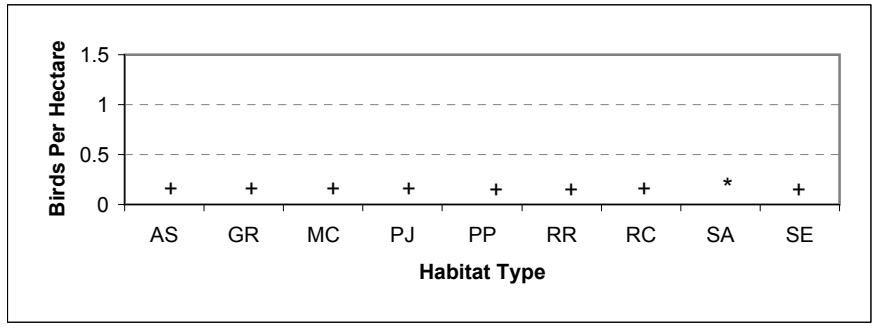


Density of Black-throated Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Black-throated Sparrow were insufficient (<20) to calculate density in this habitat type. + Black-throated Sparrow was not detected in this habitat type.

Sage Sparrow -- Sage Sparrow was detected in low numbers in Sage habitat (n = 1).

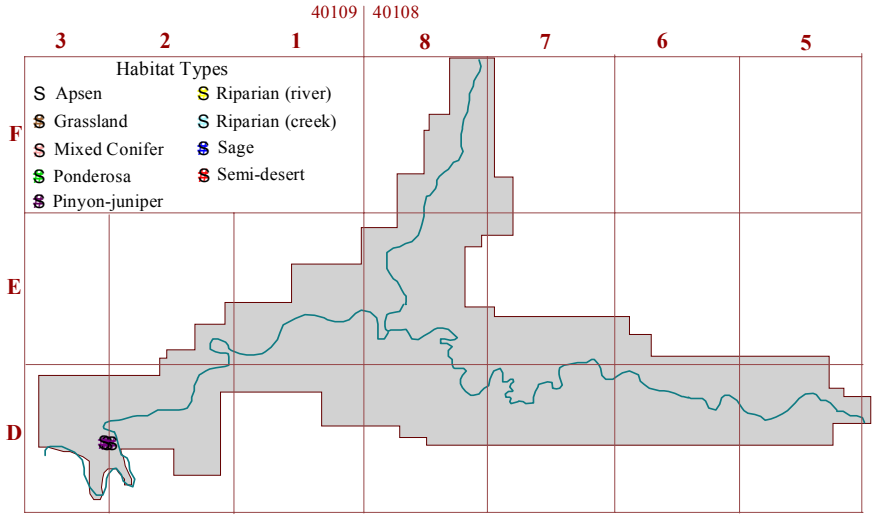


Distribution of Sage Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

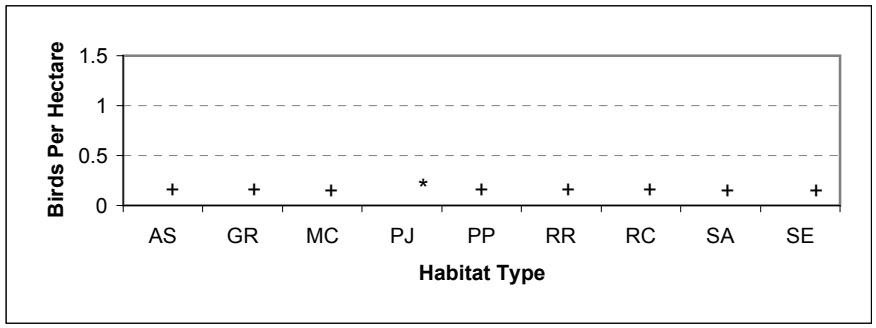


Density of Sage Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Sage Sparrow were insufficient (<20) to calculate density in this habitat type. + Sage Sparrow was not detected in this habitat type.

Savannah Sparrow -- Savannah Sparrow was detected in low numbers in Pinyon-juniper habitat (n = 3).

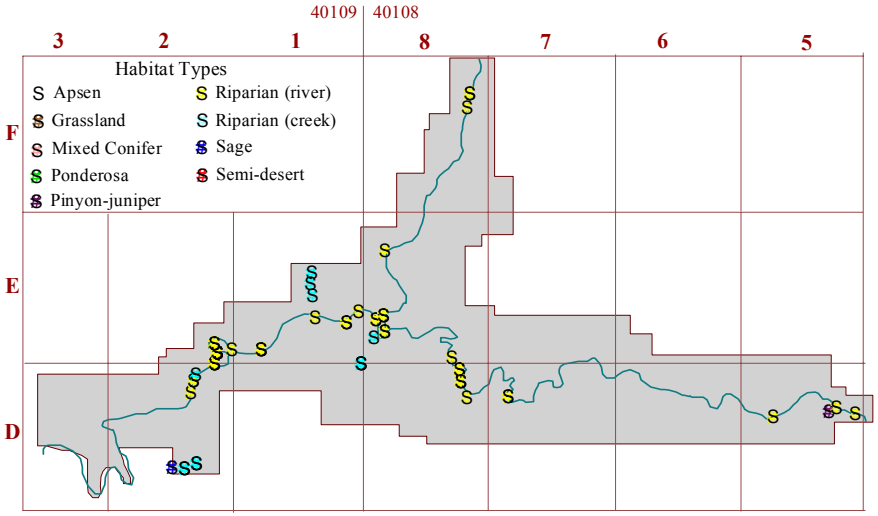


Distribution of Savannah Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

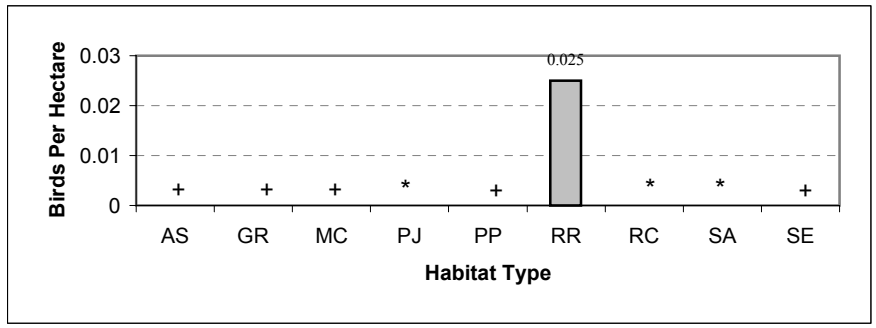


Density of Savannah Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Savannah Sparrow were insufficient (<20) to calculate density in this habitat type. + Savannah Sparrow was not detected in this habitat type.

Song Sparrow -- Detections of Song Sparrow were sufficient to calculate density in Riparian (river) habitat (D = 0.025 birds per hectare). Song Sparrow was detected in low numbers in Pinyon-juniper (n =1), Riparian (creek) (n = 15), and Sage (n = 1) habitats.

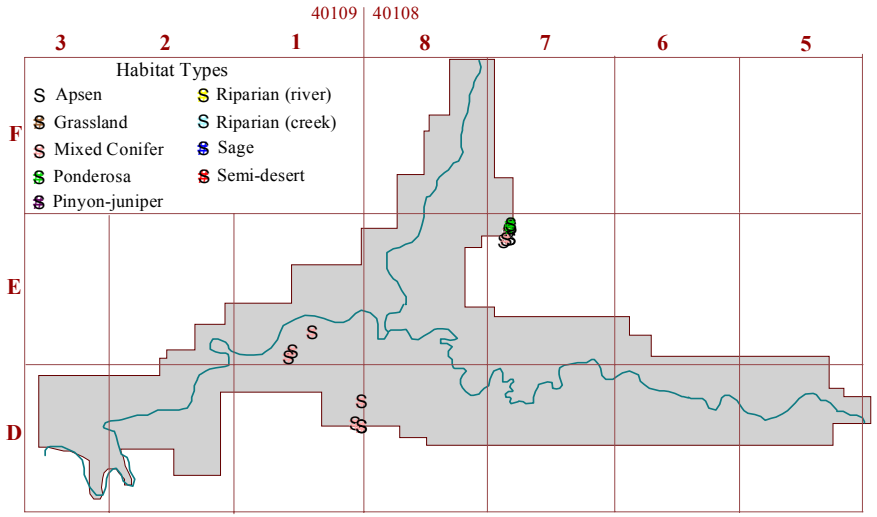


Distribution of Song Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

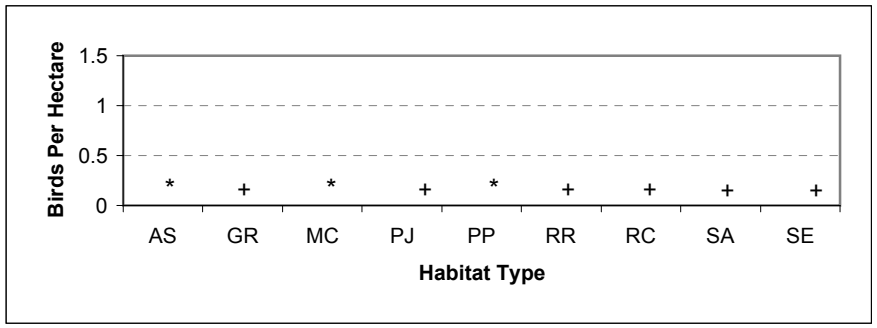


Density of Song Sparrow amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Song Sparrow were insufficient (<20) to calculate density in this habitat type. + Song Sparrow was not detected in this habitat type.

Gray-headed Junco -- Gray-headed Junco was detected in low numbers in Aspen (n = 6), Mixed Conifer (n = 2), and Ponderosa Pine (n = 2) habitats.

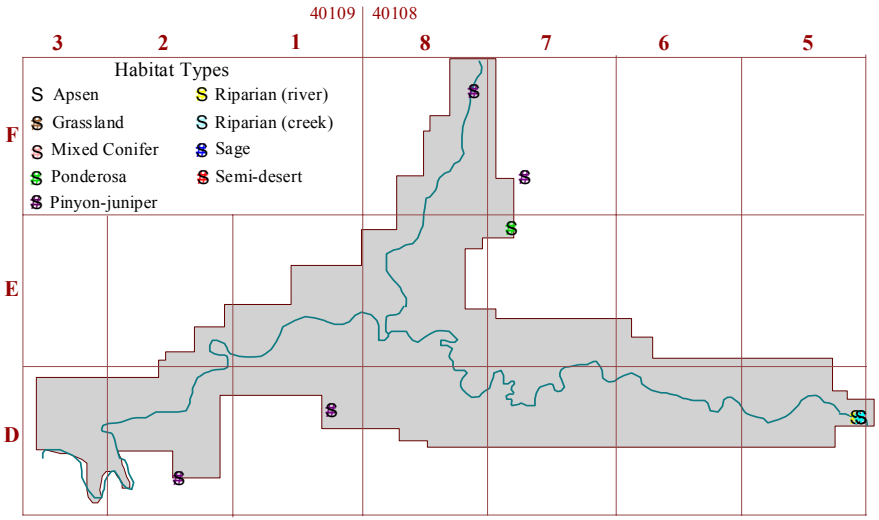


Distribution of Gray-headed Junco observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

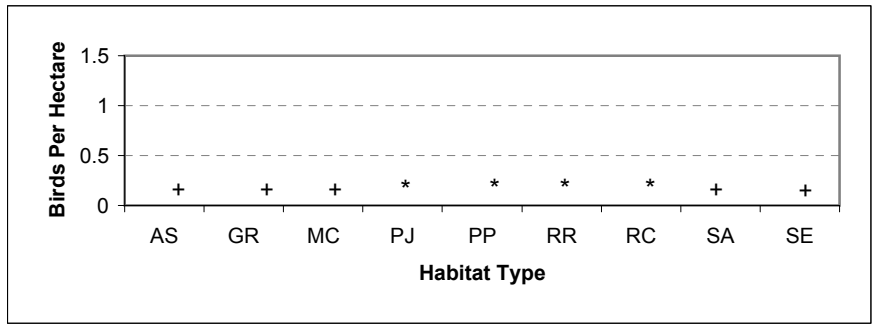


Density of Gray-headed Junco amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Gray-headed Junco were insufficient (<20) to calculate density in this habitat type. + Gray-headed Junco was not detected in this habitat type.

Black-headed Grosbeak -- Black-headed Grosbeak was detected in low numbers in Pinyon-juniper (n = 4), Ponderosa Pine (n = 1), Riparian (river) (n = 1) and Riparian (creek) (n = 2) habitats.

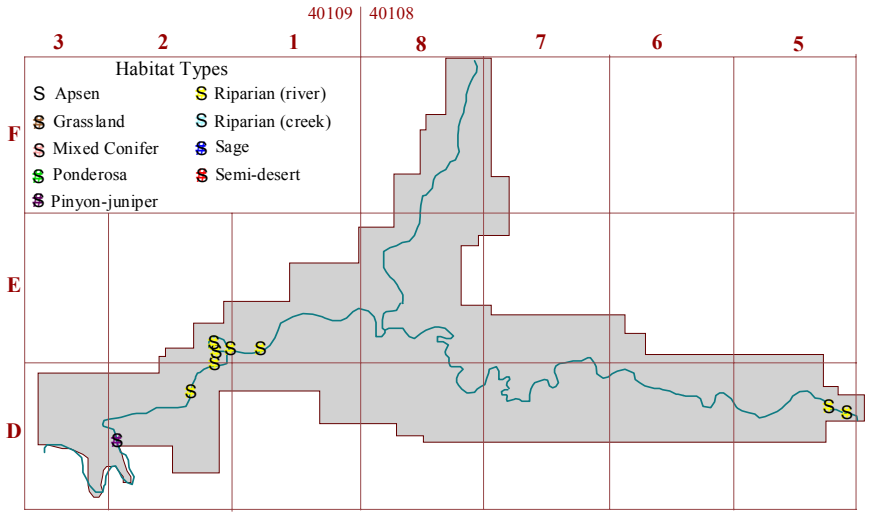


Distribution of Black-headed Grosbeak observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

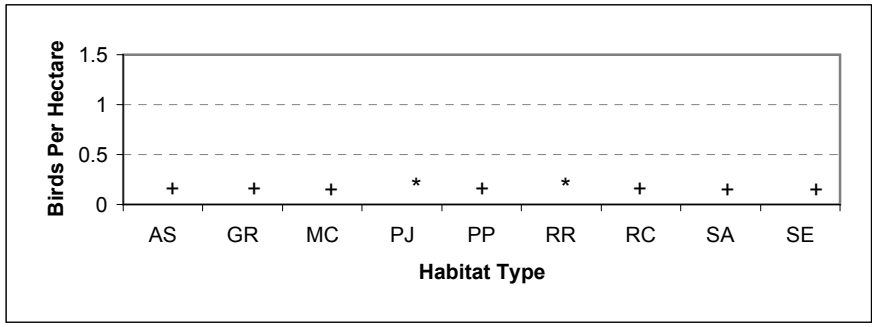


Density of Black-headed Grosbeak amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert. * Detections of Black-headed Grosbeak were insufficient (<20) to calculate density in this habitat type. + Black-headed Grosbeak was not detected in this habitat type.

Blue Grosbeak -- Blue Grosbeak was detected in low numbers in Pinyon-juniper (n = 1) and Riparian (river) (n = 8) habitats.

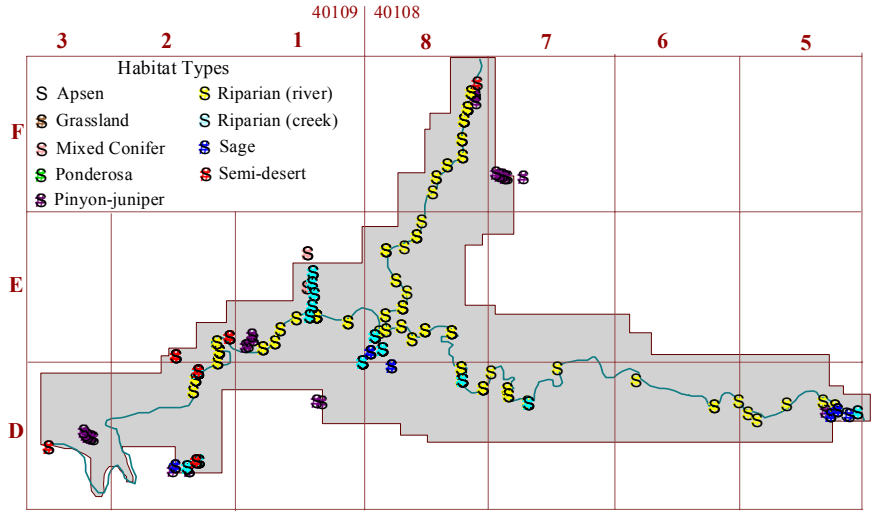


Distribution of Blue-Grosbeak observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

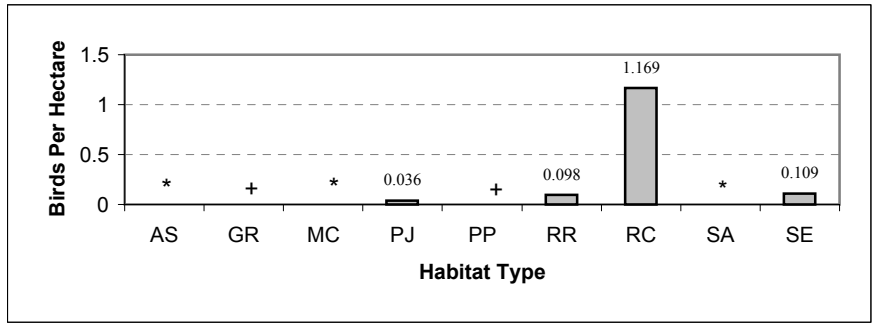


Density of Blue Grosbeak amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Blue Grosbeak were insufficient (<20) to calculate density in this habitat type. + Blue Grosbeak was not detected in this habitat type.

Lazuli Bunting -- Detections of Lazuli Bunting were sufficient to calculate density in Pinyon-juniper (D = 0.036 birds per hectare), Riparian (river) (D = 0.098 birds per hectare), Riparian (creek) (D = 1.169 birds per hectare), and Semi-desert (D = 0.109 birds per hectare) habitats. Lazuli Bunting was detected in low numbers in Aspen (n = 1) and Sage (n = 15) habitats.

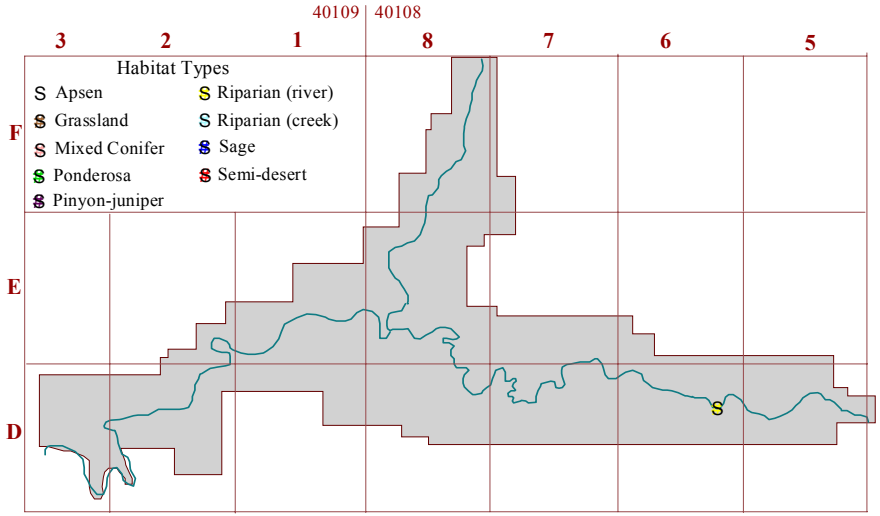


Distribution of Lazuli Bunting observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

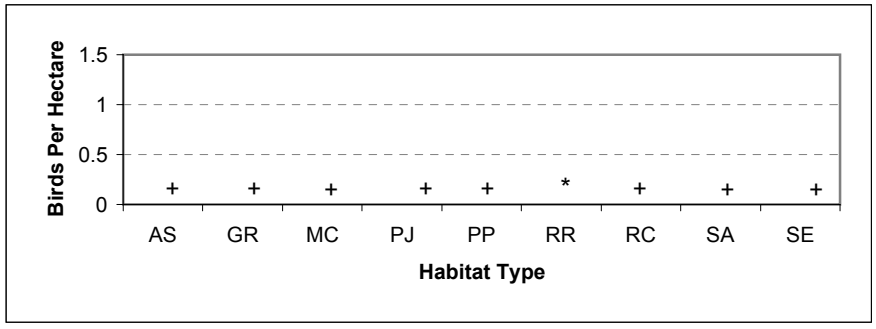


Density of Lazuli Bunting amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Lazuli Bunting were insufficient (<20) to calculate density in this habitat type. + Lazuli Bunting was not detected in this habitat type.

Indigo Bunting -- Indigo Bunting was detected in low numbers in Riparian (river) (n = 1) habitat.

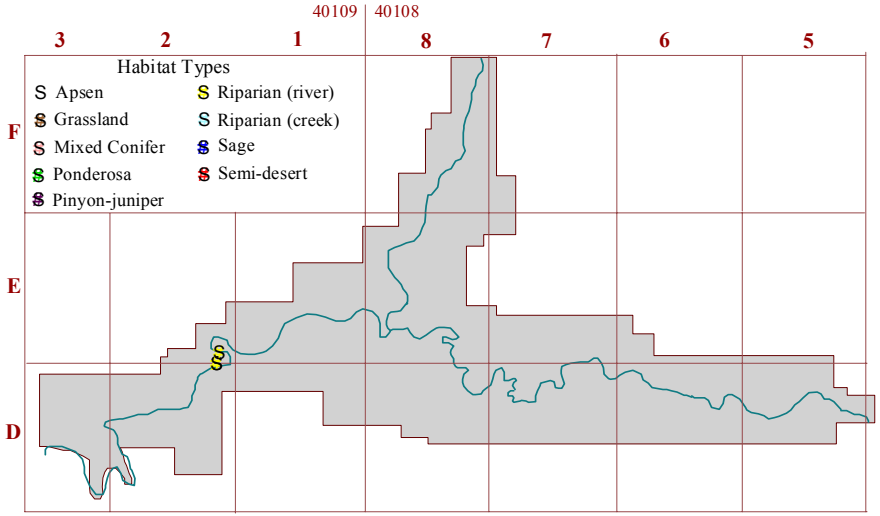


Distribution of Indigo Bunting observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

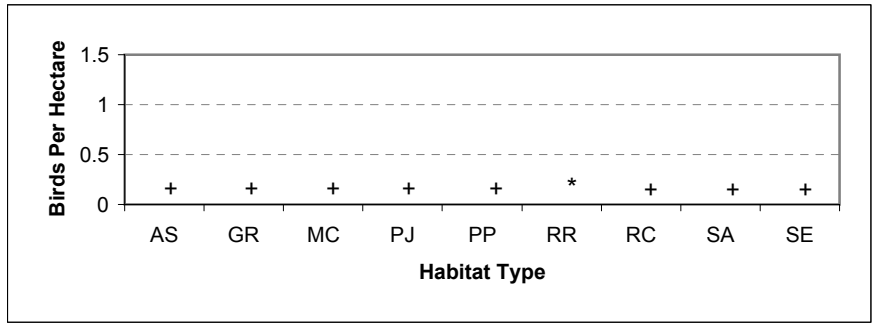


Density of Indigo Bunting amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Indigo Bunting were insufficient (<20) to calculate density in this habitat type. + Indigo Bunting was not detected in this habitat type.

Red-winged Blackbird -- Red-winged Blackbird was detected in low numbers in Riparian (river) habitat (n = 3).

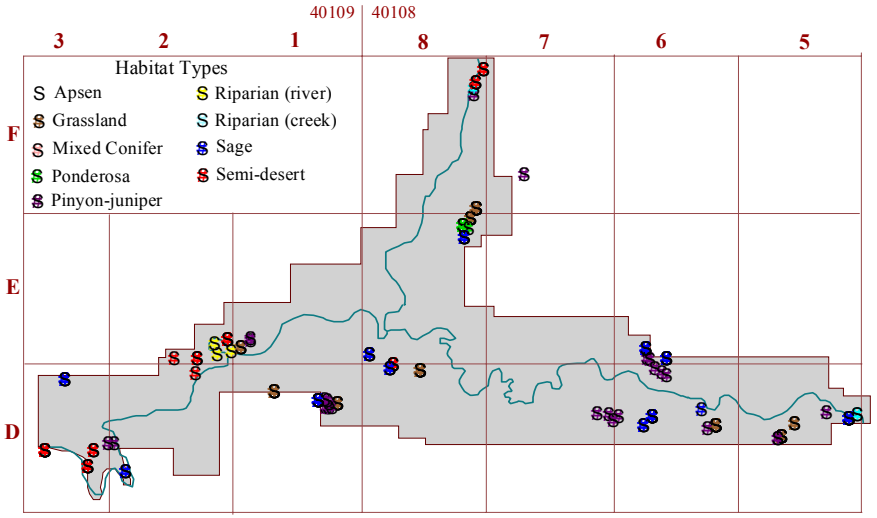


Distribution of Red-winged Blackbird observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

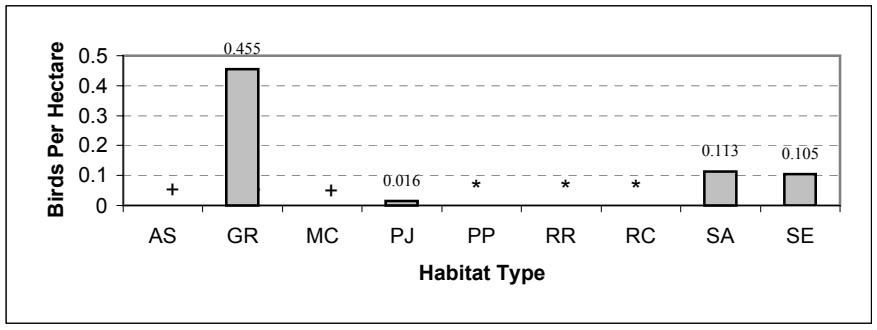


Density of Red-winged Blackbird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Red-winged Blackbird were insufficient (<20) to calculate density in this habitat type. + Red-winged Blackbird was not detected in this habitat type.

Western Meadowlark -- Detections of Western Meadowlark were sufficient to calculate density in Grassland (D = 0.455 birds per hectare), Pinyon-juniper (D = 0.016 birds per hectare), Sage (D = 0.113 birds per hectare), and Semi-desert (D = 0.105 birds per hectare) habitats. Western Meadowlark was detected in low numbers in Ponderosa Pine (n = 9), Riparian (river) (n = 3), and Riparian (creek) (n = 3) habitats.

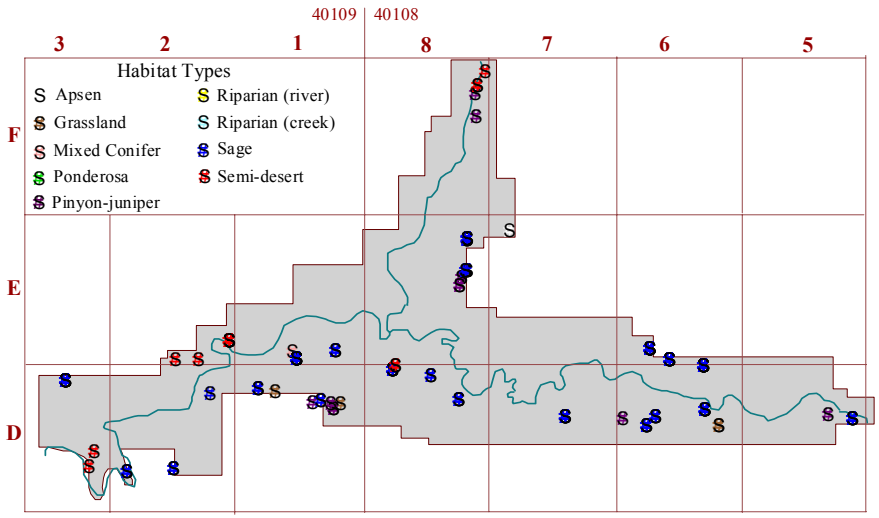


Distribution of Western Meadowlark observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

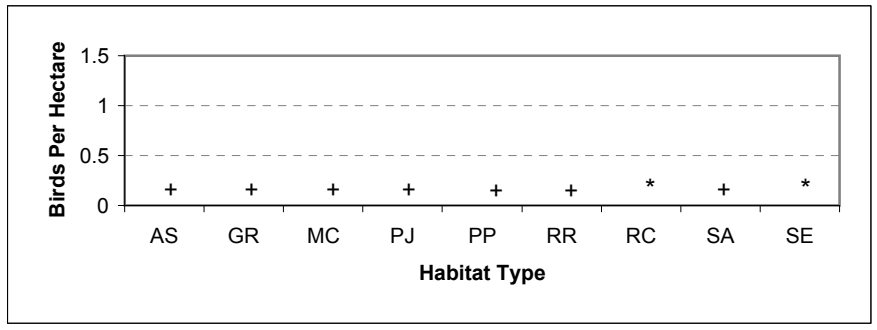


Density of Western Meadowlark amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Western Meadowlark were insufficient (<20) to calculate density in this habitat type. + Western Meadowlark was not detected in this habitat type.

Brewer's Blackbird -- Brewer's Blackbird was detected in low numbers in Riparian (creek) (n = 2) and Semi-desert (n = 1) habitats.

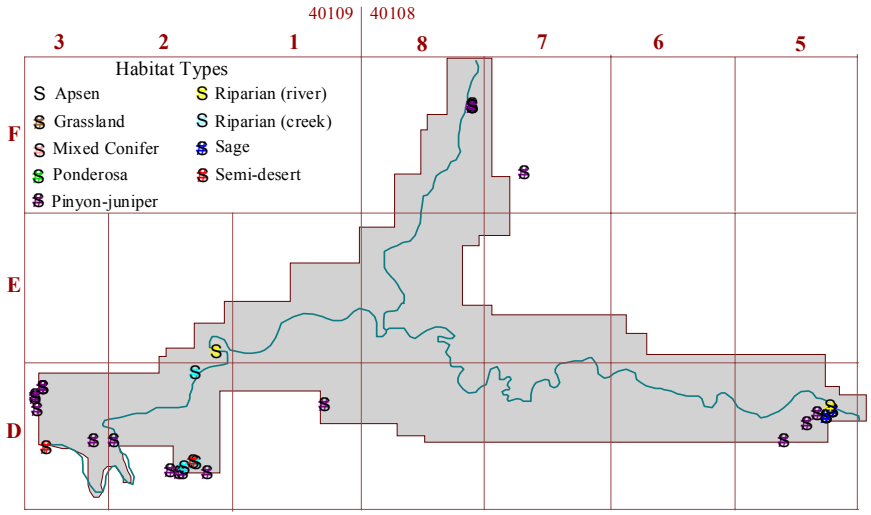


Distribution of Brewer's Sparrow observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

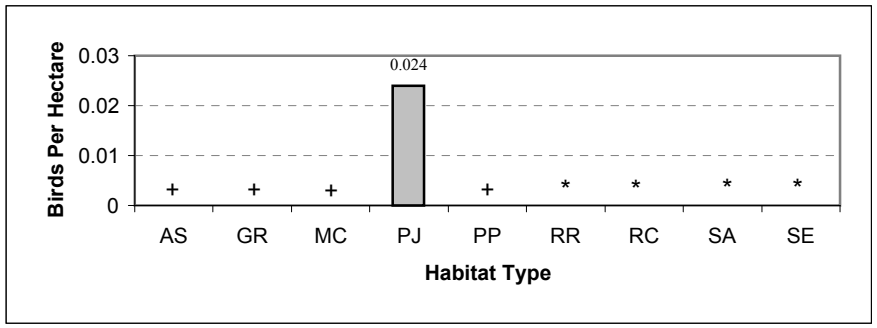


Density of Brewer's Blackbird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Brewer's Blackbird were insufficient (<20) to calculate density in this habitat type. + Brewer's Blackbird was not detected in this habitat type.

Brown-headed Cowbird -- Detections of Brown-headed Cowbird were sufficient to calculate density in Pinyon-juniper habitat (D = 0.024 birds per hectare). Brown-headed Cowbird was detected in low numbers in Riparian (river) (n = 2), Riparian (creek) (n = 3), Sage (n = 6), and Semi-desert (n = 2) habitats.

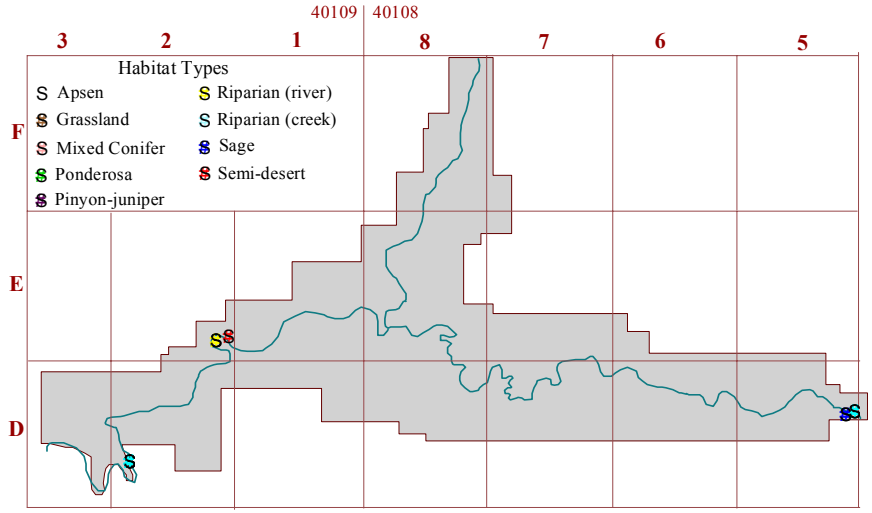


Distribution of Brown-headed Cowbird observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

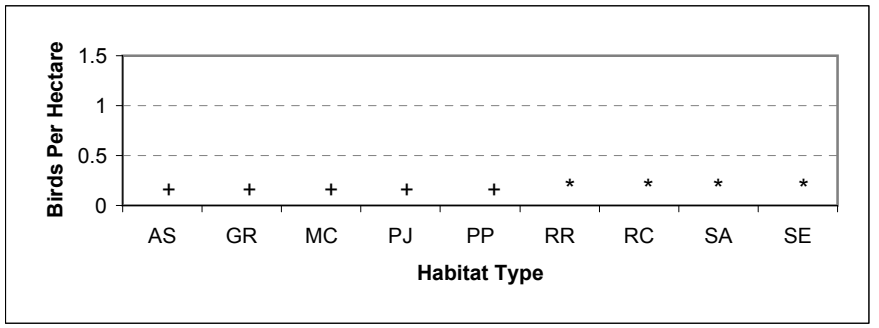


Density of Brown-headed Cowbird amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Brown-headed Cowbird were insufficient (<20) to calculate density in this habitat type. + Brown-headed Cowbird was not detected in this habitat type.

Bullock's Oriole -- Bullock's Oriole was detected in low numbers in Riparian (river) (n = 3), Riparian (creek) (n = 11), Sage (n = 2), and Semi-desert (n = 1) habitats.

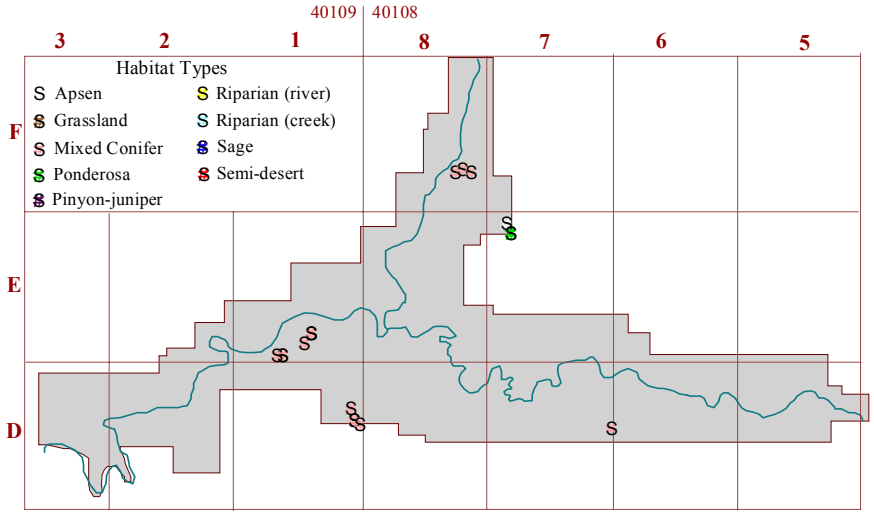


Distribution of Bullock's Oriole observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

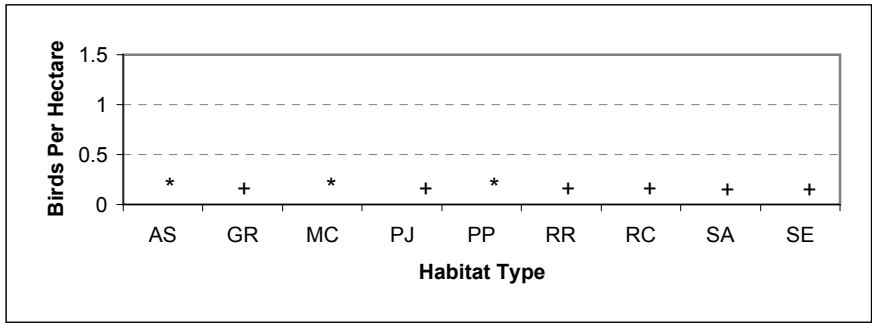


Density of Bullock's Oriole amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Bullock's Oriole were insufficient (<20) to calculate density in this habitat type. + Bullock's Oriole was not detected in this habitat type.

Cassin's Finch -- Cassin's Finch was detected in low numbers in Aspen (n = 1), Mixed Conifer (n = 16), and Ponderosa Pine (n = 2) habitats.

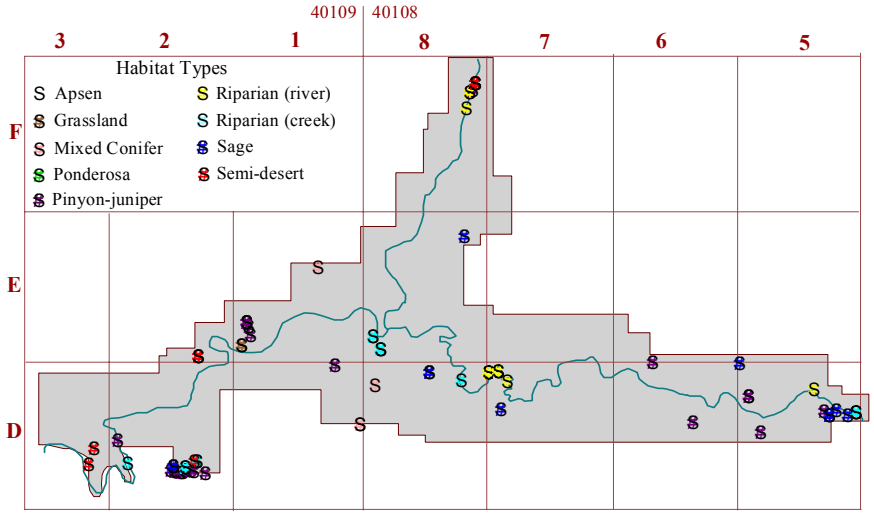


Distribution of Cassin's Finch at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

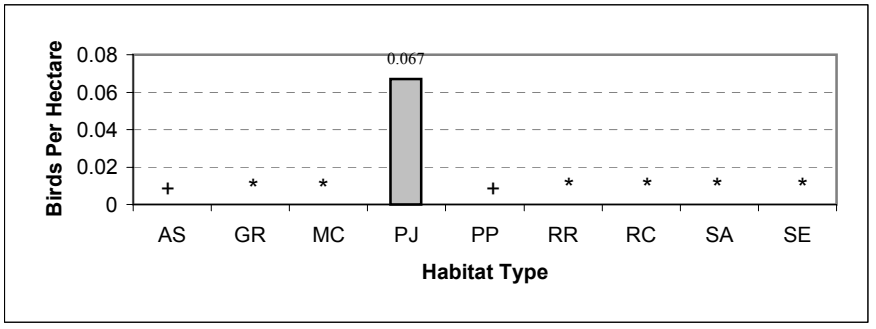


Density of Cassin's Finch amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Cassin's Finch were insufficient (<20) to calculate density in this habitat type. + Cassin's Finch was not detected in this habitat type.

House Finch -- Detections of House Finch were sufficient to calculate density in Pinyon-juniper habitat (D = 0.067 birds per hectare). House Finch was detected in low numbers in Grassland (n = 2), Mixed Conifer (n = 4), Riparian (river) (n = 13), Riparian (creek) (n = 16), Sage (n = 12) and Semi-Desert (n = 12) habitats.

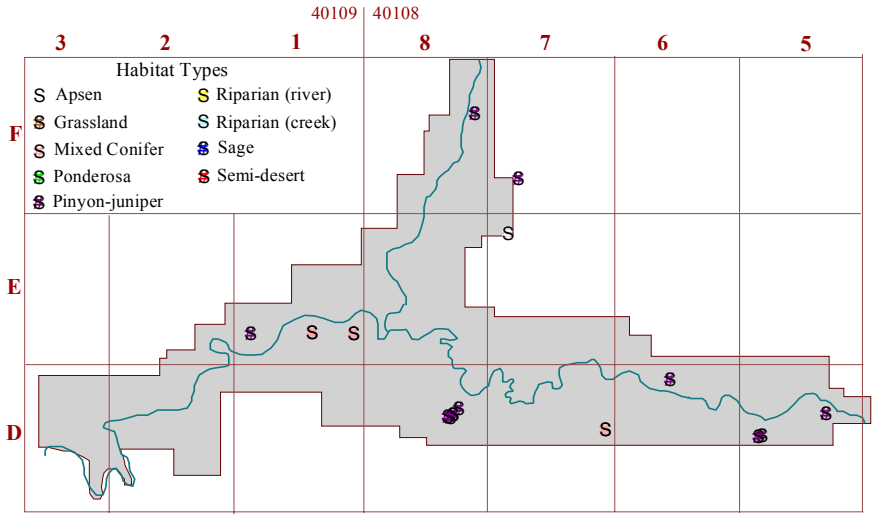


Distribution of House Finch observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

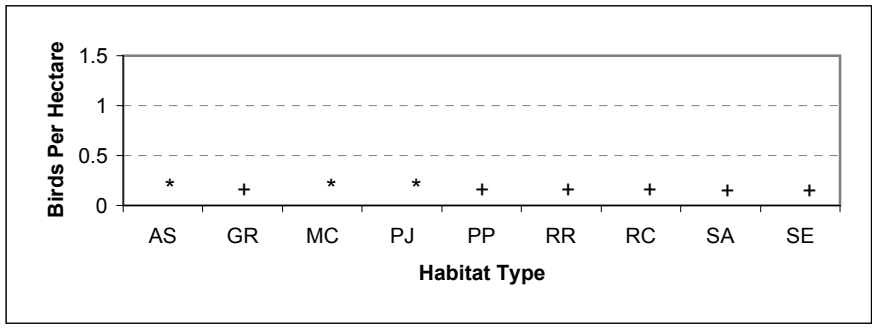


Density of House Finch amongst habitat types in Dinosaur National Monument.
AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa;
RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of House Finch were insufficient (<20) to calculate density in this habitat type. + House Finch was not detected in this habitat type.

Pine Siskin -- Pine Siskin was detected in low numbers in Aspen (n = 1), Mixed Conifer (n = 6), and Pinyon-juniper (n = 9) habitats.

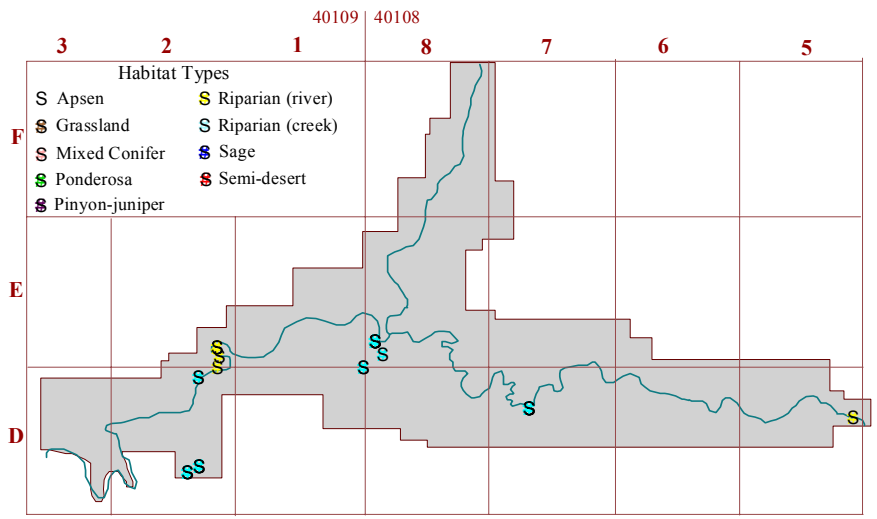


Distribution of Pine Siskin observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.

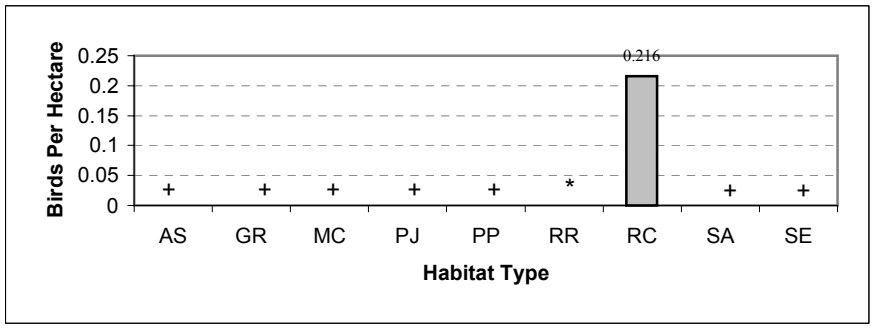


Density of Pine Siskin amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Pine Siskin were insufficient (<20) to calculate density in this habitat type. + Pine Siskin was not detected in this habitat type.

Lesser Goldfinch -- Detections of Lesser Goldfinch were sufficient to calculate density in Riparian (creek) habitat (D = 0.216 birds per hectare). Lesser Goldfinch was detected in low numbers in Riparian (river) habitat (n = 6).



Distribution of Lesser Goldfinch observations at Dinosaur National Monument. Dots indicate species detections at those observation sites. Grids represent USGS 7.5-minute quad maps.



Density of Lesser Goldfinch amongst habitat types in Dinosaur National Monument. AS=Aspen; GR=Grassland; MC=Mixed Conifer; PJ=Pinyon-juniper; PP=Ponderosa; RR=Riparian (river); RC=Riparian (creek); SA=Sage; and SE=Semi-desert.
* Detections of Lesser Goldfinch were insufficient (<20) to calculate density in this habitat type. + Lesser Goldfinch was not detected in this habitat type.

Appendix C. Revised Dinosaur National Monument Bird Checklist.

Field	Definition and Values
Latin and Common Name	The preferred local scientific name common name of species
Park Status	Status of each species in each park. Values are: ***Present in Park***: Species' occurrence in park is documented and assumed to be extant. ***Historic:*** Species' historical occurrence in the park is documented, but recent investigations indicate that the species is now probably absent. ***Probably Present***: Park is within species' range and contains appropriate habitat. Documented occurrences of the species in the adjoining region of the park give reason to suspect that it probably occurs within the park. The degree of probability may vary within this category, including species that range from common to rare. ***Unconfirmed***: Included for the park based on weak ("unconfirmed record") or no evidence, giving minimal indication of the species' occurrence in the park. ***False Report***: Species previously reported to occur within the park, but current evidence indicates that the report was based on a misidentification, a taxonomic concept no longer accepted, or some other similar problem of interpretation. ***Encroaching***: The species is known to be adjacent to, but not in the park, and has a great potential to enter the park.
Abundance	The current abundance of each species in each park. Park Status as above must be either "Present" or "Probably Present". ***Abundant***: Animals: May be seen daily, in suitable habitat and season, and counted in relatively large numbers. Plants: Large number of individuals; wide ecological amplitude or occurring in habitats covering a large portion of the park. ***Common***: Animals: May be seen daily, in suitable habitat and season, but not in large numbers. Plants: Large numbers of individuals predictably occurring in commonly encountered habitats but not those covering a large portion of the park. ***Uncommon***: Animals: Likely to be seen monthly in appropriate season/habitat. May be locally common. Plants: Few to moderate numbers of individuals; occurring either sporadically in commonly encountered habitats or in uncommon habitats. ***Rare***: Animals: Present, but usually seen only a few times each year. Plants: Few individuals, usually restricted to small areas of rare habitat. ***Occasional***: Occurs in the park at least once every few years, but not necessarily every year. Applicable to animals only. ***Unknown***: Abundance unknown.
Residency	Current residency classification for each animal species in each park. Park Status as above must be either "Present" or "Probably Present". ***Breeder***: Population reproduces in the park. ***Resident***: A significant population is maintained in the park for more than two months each year, but it is not known to breed there. ***Migratory***: Migratory species that occurs in park approximately two months or less each year and does not breed there. ***Vagrant***: Park is outside of the species' usual range. ***Unknown***: Residency status in park is unknown.
Nativity	Nativity classification for each species in each park. Park Status as defined above must be either "Present" or "Probably Present". ***Native***: The species is native to the park (either endemic or indigenous), or if the Park Status is "Probably Present" as defined above, the species would be native to the park if it were eventually confirmed in the park. ***Non-Native***: The species is not native to the park (neither endemic nor indigenous), or if the Park Status is "Probably Present" as defined above, the species would not be native to the park if it were eventually confirmed in the park. Persistent plant populations (as defined below) that reproduce are also considered non-native. ***Unknown***: Nativity classification in park is unknown.

Field	Definition and Values
Status Notes	**A** – Present in Park -- Species was detected and positively identified during General Avian Inventory and i documented in that report (Giroir 2003). **B** – Present in Park -- Species was detected and positively identified during the Colorado Breeding Bird Atla Project and is documented in that report (Kingery 1998). **C** – Present in Park -- Natural History Field Observation Card is on file. The species' normal migratory breeding, or wintering range **does** fall within Dinosaur National Monument. At least one card was submitted by a qualified **ornithologist/biologist**, or at least one card includes a **written description or photo** sufficient to rule out similar species. **D** – Present in Park -- Natural History Field Observation Card is on file. The species' normal migratory, breeding, or wintering range **does not** fall within Dinosaur National Monument. At least one card with a **written description** sufficient to rule out similar species was submitted by a qualified **ornithologist/biologist**, or at least one card includes a **photo** sufficient to make a positive identification. **E** – Present in Park -- Species specimen is in the Dinosaur National Monument museum collection. **F** – Unconfirmed -- At least one Natural History Field Observation Card is on file. The species was not reporte by a qualified ornithologist / biologist, and the written description is insufficient to rule out similar species. **G** – False Report -- At least one Natural History Field Observation Card is on file. The written descriptio clearly indicates another species. **H** – Probably Present -- There are no records of the species' occurrence in Dinosaur National Monument. The following publications suggest that the species may occur in the monument: *Colorado Birds* (Andrews and Righter 1992), *Colorado Breeding Bird Atlas* (Kingery 1998), *Colorado Bird Latilong Distribution Study* (Chase et al. 1982), *Utah Bird Latilong Distribution Study* (Walters and Sorensen 1983), or *Birds of Brown's Park National Wildlife Refuge and Vicinity* (Bryant 1997).
Residency Detail and Residency Notes	**Possible Breeder** **SF** -- Species found in suitable breeding habitat during its breeding season. **Probable Breeder** **MM --** Multiple singing males found in suitable breeding habitat during their breeding season. **PR --** Pair found in suitable breeding habitat during their breeding season. **Confirmed Breeder** **FF --** Adults feeding fledglings. **FL --** Fledglings found. **FY --** Adults feeding young. **NB --** Nest building. **NE --** Nest with eggs. **NY --** Nest with young. **UN --** Used nest.

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
174469	Gaviidae	Gavia immer	Common Loon	Present in Park	Migratory	Native	Occasional
174505	Podicipedidae	Podilymbus podiceps	Pied-billed Grebe	Present in Park	Migratory	Native	Occasional
174485	Podicipedidae	Podiceps nigricollis	Eared Grebe	Present in Park	Migratory	Native	Occasional
174503	Podicipedidae	Aechmophorus occidentalis	Western Grebe	Present in Park	Migratory	Native	Rare
174684	Pelecanidae	Pelecanus erythrorhynchos	American White Pelican	Present in Park	Migratory	Native	Rare
174714	Phalacrocoraci	Phalacrocorax auritus	Double-crested Cormorant	Present in Park	Migratory	Native	Occasional
174773	Ardeidae	Ardea herodias	Great Blue Heron	Present in Park	Breeder	Native	Uncommon
174813	Ardeidae	Egretta thula	Snowy Egret	Present in Park	Migratory	Native	Rare
174832	Ardeidae	Nycticorax nycticorax	Black-crowned Night-Heron	Present in Park	Breeder	Native	Occasional
174926	Threskiornithi	Plegadis chihi	White-faced Ibis	Present in Park	Migratory	Native	Rare
175265	Cathartidae	Cathartes aura	Turkey Vulture	Present in Park	Breeder	Native	Common
175038	Anatidae	Chen caerulescens	Snow Goose	Present in Park	Migratory	Native	Occasional
174999	Anatidae	Branta canadensis	Canada Goose	Present in Park	Breeder	Native	Common
175073	Anatidae	Anas strepera	Gadwall	Present in Park	Migratory	Native	Uncommon
175094	Anatidae	Anas americana	American Wigeon	Present in Park	Breeder	Native	Uncommon
175063	Anatidae	Anas platyrhynchos	Mallard	Present in Park	Breeder	Native	Common
175086	Anatidae	Anas discors	Blue-winged Teal	Present in Park	Breeder	Native	Occasional
175089	Anatidae	Anas cyanoptera	Cinnamon Teal	Present in Park	Breeder	Native	Uncommon
175096	Anatidae	Anas clypeata	Northern Shoveler	Present in Park	Breeder	Native	Occasional
175074	Anatidae	Anas acuta	Northern Pintail	Present in Park	Breeder	Native	Occasional
175081	Anatidae	Anas crecca	Green-winged Teal	Present in Park	Breeder	Native	Uncommon
175129	Anatidae	Aythya valisineria	Canvasback	Present in Park	Migratory	Native	Occasional
175125	Anatidae	Aythya americana	Redhead	Present in Park	Migratory	Native	Uncommon
175128	Anatidae	Aythya collaris	Ring-necked Duck	Present in Park	Migratory	Native	Uncommon
175134	Anatidae	Aythya affinis	Lesser Scaup	Present in Park	Migratory	Native	Occasional
175147	Anatidae	Clangula hyemalis	Oldsquaw	Present in Park	Vagrant	Native	Occasional
175145	Anatidae	Bucephala albeola	Bufflehead	Present in Park	Migratory	Native	Rare
175141	Anatidae	Bucephala clangula	Common Goldeneye	Present in Park	Resident	Native	Common
175144	Anatidae	Bucephala islandica	Barrow's Goldeneye	Present in Park	Migrant	Native	Occasional
175185	Anatidae	Mergus merganser	Common Merganser	Present in Park	Breeder	Native	Common
175175	Anatidae	Oxyura jamaicensis	Ruddy Duck	Present in Park	Migratory	Native	Occasional
175590	Accipitridae	Pandion haliaetus	Osprey	Present in Park	Breeder	Native	Uncommon
175420	Accipitridae	Haliaeetus leucocephalus	Bald Eagle	Present in Park	Resident	Native	Uncommon
175430	Accipitridae	Circus cyaneus	Northern Harrier	Present in Park	Breeder	Native	Uncommon
175304	Accipitridae	Accipiter striatus	Sharp-shinned Hawk	Present in Park	Breeder	Native	Uncommon

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
175309	Accipitridae	Accipiter cooperii	Cooper's Hawk	Present in Park	Breeder	Native	Uncommon
175300	Accipitridae	Accipiter gentilis	Northern Goshawk	Present in Park	Breeder	Native	Rare
175367	Accipitridae	Buteo swainsoni	Swainson's Hawk	Present in Park	Breeder	Native	Uncommon
175350	Accipitridae	Buteo jamaicensis	Red-tailed Hawk	Present in Park	Breeder	Native	Common
175377	Accipitridae	Buteo regalis	Ferruginous Hawk	Present in Park	Breeder	Native	Rare
175373	Accipitridae	Buteo lagopus	Rough-legged Hawk	Present in Park	Resident	Native	Uncommon
175407	Accipitridae	Aquila chrysaetos	Golden Eagle	Present in Park	Breeder	Native	Common
175622	Falconidae	Falco sparverius	American Kestrel	Present in Park	Breeder	Native	Common
175613	Falconidae	Falco columbarius	Merlin	Present in Park	Migratory	Native	Rare
175603	Falconidae	Falco mexicanus	Prairie Falcon	Present in Park	Breeder	Native	Rare
175604	Falconidae	Falco peregrinus	Peregrine Falcon	Present in Park	Breeder	Native	Uncommon
175908	Phasianidae	Alectoris chukar	Chukar	Present in Park	Breeder	Non-Native	Uncommon
175905	Phasianidae	Phasianus colchicus	Ring-necked Pheasant	Present in Park	Breeder	Non-Native	Uncommon
175855	Phasianidae	Centrocercus urophasianus	Sage Grouse	Present in Park	Breeder	Native	Uncommon
175860	Phasianidae	Dendragapus obscurus	Blue Grouse	Present in Park	Breeder	Native	Uncommon
176136	Phasianidae	Meleagris gallopavo	Wild Turkey	Present in Park	Breeder	Native	Rare
175876	Phasianidae	Callipepla californica	California Quail	Present in Park	Breeder	Non-Native	Occasional
176292	Rallidae	Fulica americana	American Coot	Present in Park	Breeder	Native	Uncommon
176177	Gruidae	Grus canadensis	Sandhill Crane	Present in Park	Migratory	Native	Uncommon
176520	Charadriidae	Charadrius vociferus	Killdeer	Present in Park	Breeder	Native	Common
176726	Recurvirostridae	Himantopus mexicanus	Black-necked Stilt	Present in Park	Migratory	Native	Rare
176721	Recurvirostridae	Recurvirostra americana	American Avocet	Present in Park	Breeder	Native	Rare
176619	Scolopacidae	Tringa melanoleuca	Greater Yellowlegs	Present in Park	Migratory	Native	Uncommon
176620	Scolopacidae	Tringa flavipes	Lesser Yellowlegs	Present in Park	Migratory	Native	Uncommon
176638	Scolopacidae	Catoptrophorus semipalmatus	Willet	Present in Park	Migratory	Native	Occasional
176612	Scolopacidae	Actitis macularia	Spotted Sandpiper	Present in Park	Breeder	Native	Common
176593	Scolopacidae	Numenius americanus	Long-billed Curlew	Present in Park	Migratory	Native	Occasional
176700	Scolopacidae	Gallinago gallinago	Common Snipe	Present in Park	Breeder	Native	Occasional
176736	Scolopacidae	Phalaropus tricolor	Wilson's Phalarope	Present in Park	Migratory	Native	Occasional
176838	Laridae	Larus pipixcan	Franklin's Gull	Present in Park	Migratory	Native	Occasional
176865	Laridae	Xema sabini	Sabine's Gull	Present in Park	Vagrant	Native	Occasional
176887	Laridae	Sterna forsteri	Forster's Tern	Present in Park	Migratory	Native	Rare
177071	Columbidae	Columba livia	Rock Dove	Present in Park	Breeder	Native	Common
177125	Columbidae	Zenaida macroura	Mourning Dove	Present in Park	Breeder	Native	Abundant
177831	Cuculidae	Coccyzus americanus	Yellow-billed Cuckoo	Present in Park	Breeder	Native	Occasional

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
177878	Strigidae	Otus flammeolus	Flammulated Owl	Present in Park	Breeder	Native	Occasional
555388	Strigidae	Otus kennicottii	Western Screech-Owl	Present in Park	Breeder	Native	Rare
177884	Strigidae	Bubo virginianus	Great Horned Owl	Present in Park	Breeder	Native	Common
177902	Strigidae	Glaucidium gnoma	Northern Pygmy-Owl	Present in Park	Breeder	Native	Rare
177946	Strigidae	Athene cunicularia	Burrowing Owl	Present in Park	Breeder	Native	Rare
177928	Strigidae	Strix occidentalis lucida	Spotted Owl	Present in Park	Breeder	Native	Occasional
177932	Strigidae	Asio otus	Long-eared Owl	Present in Park	Breeder	Native	Rare
177935	Strigidae	Asio flammeus	Short-eared Owl	Present in Park	Migrant	Native	Occasional
177942	Strigidae	Aegolius acadicus	Northern Saw-whet Owl	Present in Park	Breeder	Native	Uncommon
177979	Caprimulgidae	Chordeiles minor	Common Nighthawk	Present in Park	Breeder	Native	Abundant
555544	Caprimulgidae	Phalaenoptilus nuttallii	Common Poorwill	Present in Park	Breeder	Native	Common
178014	Apodidae	Aeronautes saxatalis	White-throated Swift	Present in Park	Breeder	Native	Abundant
178054	Trochilidae	Lampornis clemenciae	Blue-throated Hummingbird	Present in Park	Vagrant	Native	Occasional
178033	Trochilidae	Archilochus alexandri	Black-chinned Hummingbird	Present in Park	Breeder	Native	Common
178048	Trochilidae	Stellula calliope	Calliope Hummingbird	Present in Park	Migratory	Native	Rare
178038	Trochilidae	Selasphorus platycercus	Broad-tailed Hummingbird	Present in Park	Breeder	Native	Common
178040	Trochilidae	Selasphorus rufus	Rufous Hummingbird	Present in Park	Migratory	Native	Uncommon
178120	Alcedinidae	Ceryle torquata	Belted Kingfisher	Present in Park	Breeder	Native	Rare
178196	Picidae	Melanerpes lewis	Lewis's Woodpecker	Present in Park	Breeder	Native	Occasional
178186	Picidae	Melanerpes erythrocephalus	Red-headed Woodpecker	Present in Park	Vagrant	Native	Occasional
178211	Picidae	Sphyrapicus nuchalis	Red-naped Sapsucker	Present in Park	Breeder	Native	Rare
178259	Picidae	Picoides pubescens	Downy Woodpecker	Present in Park	Breeder	Native	Uncommon
178262	Picidae	Picoides villosus	Hairy Woodpecker	Present in Park	Breeder	Native	Uncommon
178251	Picidae	Picoides tridactylus	Three-toed Woodpecker	Present in Park	Breeder	Native	Occasional
178154	Picidae	Colaptes auratus	Northern Flicker (Red-shafted)	Present in Park	Breeder	Native	Common
178365	Tyrannidae	Contopus borealis	Olive-sided Flycatcher	Present in Park	Breeder	Native	Rare
178360	Tyrannidae	Contopus sordidulus	Western Wood-Pewee	Present in Park	Breeder	Native	Rare
178341	Tyrannidae	Empidonax traillii	Willow Flycatcher	Present in Park	Breeder	Native	Rare
554254	Tyrannidae	Empidonax hammondii	Hammond's Flycatcher	Present in Park	Breeder	Native	Rare
178346	Tyrannidae	Empidonax oberholseri	Dusky Flycatcher	Present in Park	Breeder	Native	Uncommon
178347	Tyrannidae	Empidonax wrightii	Gray Flycatcher	Present in Park	Breeder	Native	Common
178348	Tyrannidae	Empidonax difficilis	Cordilleran Flycatcher	Present in Park	Breeder	Native	Rare
178333	Tyrannidae	Sayornis saya	Say's Phoebe	Present in Park	Breeder	Native	Common
178316	Tyrannidae	Myiarchus cinerascens	Ash-throated Flycatcher	Present in Park	Breeder	Native	Common
178287	Tyrannidae	Tyrannus verticalis	Western Kingbird	Present in Park	Breeder	Native	Uncommon

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
178279	Tyrannidae	Tyrannus tyrannus	Eastern Kingbird	Present in Park	Breeder	Native	Rare
178511	Laniidae	Lanius excubitor	Northern Shrike	Present in Park	Resident	Native	Rare
178515	Laniidae	Lanius ludovicianus	Loggerhead Shrike	Present in Park	Breeder	Native	Uncommon
179008	Vireonidae	Vireo vicinior	Gray Vireo	Present in Park	Breeder	Native	Uncommon
179010	Vireonidae	Vireo solitarius	Plumbeous Vireo	Present in Park	Breeder	Native	Common
179023	Vireonidae	Vireo gilvus	Warbling Vireo	Present in Park	Breeder	Native	Rare
179667	Corvidae	Perisoreus canadensis	Gray Jay	Present in Park	Vagrant	Native	Occasional
179685	Corvidae	Cyanocitta stelleri	Steller's Jay	Present in Park	Breeder	Native	Uncommon
179693	Corvidae	Aphelocoma coerulescens	Western Scrub-Jay	Present in Park	Breeder	Native	Common
179748	Corvidae	Gymnorhinus cyanocephalus	Pinyon Jay	Present in Park	Breeder	Native	Common
179750	Corvidae	Nucifraga columbiana	Clark's Nutcracker	Present in Park	Breeder	Native	Uncommon
179720	Corvidae	Pica pica	Black-billed Magpie	Present in Park	Breeder	Native	Common
179731	Corvidae	Corvus brachyrhynchos	American Crow	Present in Park	Breeder	Native	Uncommon
179725	Corvidae	Corvus corax	Common Raven	Present in Park	Breeder	Native	Common
554256	Alaudidae	Eremophila alpestris	Horned Lark	Present in Park	Breeder	Native	Uncommon
178431	Hirundinidae	Tachycineta bicolor	Tree Swallow	Present in Park	Migratory	Native	Uncommon
178427	Hirundinidae	Tachycineta thalassina	Violet-green Swallow	Present in Park	Breeder	Native	Abundant
178443	Hirundinidae	Stelgidopteryx serripennis	Northern Rough-winged Swallow	Present in Park	Migratory	Native	Uncommon
178436	Hirundinidae	Riparia riparia	Bank Swallow	Present in Park	Migratory	Native	Uncommon
178453	Hirundinidae	Hirundo pyrrhonota	Cliff Swallow	Present in Park	Breeder	Native	Abundant
178448	Hirundinidae	Hirundo rustica	Barn Swallow	Present in Park	Breeder	Native	Rare
178699	Paridae	Parus atricapillus	Black-capped Chickadee	Present in Park	Breeder	Native	Uncommon
178718	Paridae	Parus gambeli	Mountain Chickadee	Present in Park	Breeder	Native	Common
178744	Paridae	Parus inornatus	Juniper Titmouse	Present in Park	Breeder	Native	Common
178764	Aegithalidae	Psaltriparus minimus	Bushtit	Present in Park	Breeder	Native	Common
178784	Sittidae	Sitta canadensis	Red-breasted Nuthatch	Present in Park	Breeder	Native	Uncommon
178775	Sittidae	Sitta carolinensis	White-breasted Nuthatch	Present in Park	Breeder	Native	Uncommon
178788	Sittidae	Sitta pygmaea	Pygmy Nuthatch	Present in Park	Breeder	Native	Rare
178803	Certhiidae	Certhia americana	Brown Creeper	Present in Park	Breeder	Native	Rare
178614	Troglodytidae	Salpinctes obsoletus	Rock Wren	Present in Park	Breeder	Native	Common
178610	Troglodytidae	Catherpes mexicanus	Canyon Wren	Present in Park	Breeder	Native	Common
178562	Troglodytidae	Thryomanes bewickii	Bewick's Wren	Present in Park	Breeder	Native	Uncommon
178541	Troglodytidae	Troglodytes aedon	House Wren	Present in Park	Breeder	Native	Common
178536	Cinclidae	Cinclus mexicanus	American Dipper	Present in Park	Breeder	Native	Uncommon
179865	Muscicapidae	Regulus satrapa	Golden-crowned Kinglet	Present in Park	Migratory	Native	Occasional

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
179870	Muscicapidae	Regulus calendula	Ruby-crowned Kinglet	Present in Park	Breeder	Native	Uncommon
179853	Muscicapidae	Polioptila caerulea	Blue-gray Gnatcatcher	Present in Park	Breeder	Native	Common
179806	Muscicapidae	Sialia mexicana	Western Bluebird	Present in Park	Breeder	Native	Rare
179811	Muscicapidae	Sialia currucoides	Mountain Bluebird	Present in Park	Breeder	Native	Common
179824	Muscicapidae	Myadestes townsendi	Townsend's Solitaire	Present in Park	Breeder	Native	Uncommon
179788	Muscicapidae	Catharus ustulatus	Swainson's Thrush	Present in Park	Migratory	Native	Occasional
179779	Muscicapidae	Catharus guttatus	Hermit Thrush	Present in Park	Breeder	Native	Common
179759	Muscicapidae	Turdus migratorius	American Robin	Present in Park	Breeder	Native	Common
178625	Mimidae	Dumetella carolinensis	Gray Catbird	Present in Park	Breeder	Native	Occasional
178620	Mimidae	Mimus polyglottos	Northern Mockingbird	Present in Park	Breeder	Native	Rare
178654	Mimidae	Oreoscoptes montanus	Sage Thrasher	Present in Park	Breeder	Native	Rare
178627	Mimidae	Toxostoma rufum	Brown Thrasher	Present in Park	Migratory	Native	Occasional
178529	Bombycillidae	Bombycilla garrulus	Bohemian Waxwing	Present in Park	Resident	Native	Occasional
178532	Bombycillidae	Bombycilla cedrorum	Cedar Waxwing	Present in Park	Resident	Native	Occasional
179637	Sturnidae	Sturnus vulgaris	European Starling	Present in Park	Breeder	Non-Native	Common
178856	Emberizidae	Vermivora celata	Orange-crowned Warbler	Present in Park	Breeder	Native	Rare
178864	Emberizidae	Vermivora virginiae	Virginia's Warbler	Present in Park	Breeder	Native	Uncommon
178878	Emberizidae	Dendroica petechia	Yellow Warbler	Present in Park	Breeder	Native	Abundant
178887	Emberizidae	Dendroica tigrina	Cape May Warbler	Present in Park	Migratory	Native	Occasional
178891	Emberizidae	Dendroica coronata	Yellow-rumped Warbler (Audubon's)	Present in Park	Breeder	Native	Common
178896	Emberizidae	Dendroica nigrescens	Black-throated Gray Warbler	Present in Park	Breeder	Native	Abundant
178897	Emberizidae	Dendroica townsendi	Townsend's Warbler	Present in Park	Migratory	Native	Uncommon
178913	Emberizidae	Dendroica striata	Blackpoll Warbler	Present in Park	Vagrant	Native	Occasional
178979	Emberizidae	Setophaga ruticilla	American Redstart	Present in Park	Migratory	Native	Occasional
178850	Emberizidae	Helmitheros vermivorus	Worm-eating Warbler	Present in Park	Vagrant	Native	Occasional
178940	Emberizidae	Oporornis tolmiei	MacGillivray's Warbler	Present in Park	Breeder	Native	Rare
178944	Emberizidae	Geothlypis trichas	Common Yellowthroat	Present in Park	Breeder	Native	Rare
178973	Emberizidae	Wilsonia pusilla	Wilson's Warbler	Present in Park	Migratory	Native	Uncommon
178964	Emberizidae	Icteria virens	Yellow-breasted Chat	Present in Park	Breeder	Native	Uncommon
179882	Emberizidae	Piranga ludoviciana	Western Tanager	Present in Park	Breeder	Native	Common
179310	Emberizidae	Pipilo chlorurus	Green-tailed Towhee	Present in Park	Breeder	Native	Common
179276	Emberizidae	Pipilo erythrophthalmus	Spotted Towhee	Present in Park	Breeder	Native	Abundant
179432	Emberizidae	Spizella arborea	American Tree Sparrow	Present in Park	Resident	Native	Uncommon
179435	Emberizidae	Spizella passerina	Chipping Sparrow	Present in Park	Breeder	Native	Abundant
179440	Emberizidae	Spizella breweri	Brewer's Sparrow	Present in Park	Breeder	Native	Abundant

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
179366	Emberizidae	Pooecetes gramineus	Vesper Sparrow	Present in Park	Breeder	Native	Common
179371	Emberizidae	Chondestes grammacus	Lark Sparrow	Present in Park	Breeder	Native	Common
179395	Emberizidae	Amphispiza bilineata	Black-throated Sparrow	Present in Park	Breeder	Native	Uncommon
179402	Emberizidae	Amphispiza belli	Sage Sparrow	Present in Park	Breeder	Native	Rare
179312	Emberizidae	Calamospiza melanocorys	Lark Bunting	Present in Park	Breeder	Native	Occasional
179314	Emberizidae	Passerculus sandwichensis	Savannah Sparrow	Present in Park	Breeder	Native	Rare
179333	Emberizidae	Ammodramus savannarum	Grasshopper Sparrow	Present in Park	Migratory	Native	Occasional
179464	Emberizidae	Passerella iliaca	Fox Sparrow	Present in Park	Vagrant	Native	Occasional
179492	Emberizidae	Melospiza melodia	Song Sparrow	Present in Park	Breeder	Native	Common
179454	Emberizidae	Zonotrichia querula	Harris's Sparrow	Present in Park	Migratory	Native	Occasional
179455	Emberizidae	Zonotrichia leucophrys	White-crowned Sparrow	Present in Park	Resident	Native	Common
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (Oregon)	Present in Park	Resident	Native	Common
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (Slate-colored)	Present in Park	Resident	Native	Uncommon
179410	Emberizidae	Junco hyemalis	Dark-eyed Junco (Gray-headed)	Present in Park	Breeder	Native	Common
179140	Emberizidae	Pheucticus melanocephalus	Black-headed Grosbeak	Present in Park	Breeder	Native	Uncommon
179145	Emberizidae	Guiraca caerulea	Blue Grosbeak	Present in Park	Breeder	Native	Uncommon
179151	Emberizidae	Passerina amoena	Lazuli Bunting	Present in Park	Breeder	Native	Abundant
179150	Emberizidae	Passerina cyanea	Indigo Bunting	Present in Park	Breeder	Native	Rare
179045	Emberizidae	Agelaius phoeniceus	Red-winged Blackbird	Present in Park	Breeder	Native	Uncommon
179039	Emberizidae	Sturnella neglecta	Western Meadowlark	Present in Park	Breeder	Native	Common
179043	Emberizidae	Xanthocephalus xanthocepha	Yellow-headed Blackbird	Present in Park	Migratory	Native	Rare
179094	Emberizidae	Euphagus cyanocephalus	Brewer's Blackbird	Present in Park	Breeder	Native	Common
179104	Emberizidae	Quiscalus quiscula	Common Grackle	Present in Park	Migratory	Native	Occasional
179112	Emberizidae	Molothrus ater	Brown-headed Cowbird	Present in Park	Breeder	Native	Uncommon
179083	Emberizidae	Icterus galbula	Bullock's Oriole	Present in Park	Breeder	Native	Common
179224	Fringillidae	Leucosticte arctoa tephrocus	Gray-crowned Rosy-Finch	Present in Park	Resident	Native	Uncommon
179224	Fringillidae	Leucosticte arctoa atrata	Black Rosy-Finch	Present in Park	Resident	Native	Occasional
179224	Fringillidae	Leucosticte arctoa australus	Brown-capped Rosy-Finch	Present in Park	Resident	Native	Uncommon
179205	Fringillidae	Pinicola enucleator	Pine Grosbeak	Present in Park	Breeder	Native	Rare
179190	Fringillidae	Carpodacus cassinii	Cassin's Finch	Present in Park	Breeder	Native	Uncommon
179191	Fringillidae	Carpodacus mexicanus	House Finch	Present in Park	Breeder	Native	Common
179259	Fringillidae	Loxia curvirostra	Red Crossbill	Present in Park	Breeder	Native	Rare
179233	Fringillidae	Carduelis pinus	Pine Siskin	Present in Park	Breeder	Native	Uncommon
179234	Fringillidae	Carduelis psaltria	Lesser Goldfinch	Present in Park	Resident	Native	Uncommon
179236	Fringillidae	Carduelis tristis	American Goldfinch	Present in Park	Breeder	Native	Uncommon

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
179173	Fringillidae	Coccothraustes vespertinus	Evening Grosbeak	Present in Park	Breeder	Native	Uncommon
179628	Passeridae	Passer domesticus	House Sparrow	Present in Park	Breeder	Non-Native	Uncommon
175122	Anatidae	Aix sponsa	Wood Duck	Unconfirmed	Unknown	Native	Unknown
176615	Scolopacidae	Tringa solitaria	Solitary Sandpiper	Unconfirmed	Unknown	Native	Unknown
176830	Laridae	Larus delawarensis	Ring-billed Gull	Unconfirmed	Unknown	Native	Unknown
179003	Vireonidae	Vireo bellii	Bell's Vireo	Unconfirmed	Unknown	Native	Unknown
179021	Vireonidae	Vireo olivaceus	Red-eyed Vireo	Unconfirmed	Unknown	Native	Unknown
178464	Hirundinidae	Progne subis	Purple Martin	Unconfirmed	Unknown	Native	Unknown
178608	Troglodytidae	Cistothorus palustris	Marsh Wren	Unconfirmed	Unknown	Native	Unknown
179852	Muscicapidae	Polioptila melanura	Black-tailed Gnatcatcher	Unconfirmed	Unknown	Native	Unknown
179773	Muscicapidae	Ixoreus naevius	Varied Thrush	Unconfirmed	Unknown	Native	Unknown
178891	Emberizidae	Dendroica coronata	Yellow-rumped Warbler (Myrtle)	Unconfirmed	Unknown	Native	Unknown
178844	Emberizidae	Mniotilta varia	Black-and-white Warbler	Unconfirmed	Unknown	Native	Unknown
179339	Emberizidae	Ammodramus bairdii	Baird's Sparrow	Unconfirmed	Unknown	Native	Unknown
179484	Emberizidae	Melospiza lincolnii	Lincoln's Sparrow	Unconfirmed	Unknown	Native	Unknown
179525	Emberizidae	Calcarius mccownii	McCown's Longspur	Unconfirmed	Unknown	Native	Unknown
179124	Emberizidae	Cardinalis cardinalis	Northern Cardinal	Unconfirmed	Unknown	Native	Unknown
179139	Emberizidae	Pheucticus ludovicianus	Rose-breasted Grosbeak	Unconfirmed	Unknown	Native	Unknown
179082	Emberizidae	Icterus parisorum	Scott's Oriole	Unconfirmed	Unknown	Native	Unknown
179230	Fringillidae	Carduelis flammea	Common Redpoll	Unconfirmed	Unknown	Native	Unknown
175284	Accipitridae	Elanus caeruleus	White-tailed (Black-shouldered) Kite	False Report		Native	
176176	Gruidae	Grus americana	Whooping Crane	False Report		Native	
178202	Picidae	Sphyrapicus varius	Yellow-bellied Sapsucker	False Report		Native	
178319	Tyrannidae	Myiarchus tuberculifer	Dusky-capped Flycatcher	False Report		Native	
179293	Emberizidae	Pipilo fuscus	Brown (Canyon) Towhee	False Report		Native	
174482	Podicipedidae	Podiceps auritus	Horned Grebe	Probably Present	Migratory	Native	Occasional
174502	Podicipedidae	Aechmophorus clarkii	Clark's Grebe	Probably Present	Migratory	Native	Occasional
174856	Ardeidae	Botaurus lentiginosus	American Bittern	Probably Present	Migratory	Native	Occasional
174810	Ardeidae	Ardea alba	Great Egret	Probably Present	Migratory	Native	Occasional
174803	Ardeidae	Bubulcus ibis	Cattle Egret	Probably Present	Migratory	Native	Occasional
174798	Ardeidae	Butorides striatus	Green Heron	Probably Present	Migratory	Native	Occasional
175020	Anatidae	Anser albifrons	Greater White-fronted Goose	Probably Present	Migratory	Native	Occasional
174992	Anatidae	Cygnus buccinator	Trumpeter Swan	Probably Present	Migratory	Native	Occasional
174987	Anatidae	Cygnus columbianus	Tundra Swan	Probably Present	Vagrant	Native	Occasional
175130	Anatidae	Aythya marila	Greater Scaup	Probably Present	Migratory	Native	Occasional
175163	Anatidae	Melanitta fusca	White-winged Scoter	Probably Present	Migratory	Native	Rare

Apendix C (continued).

Tsn*	Family Name	Preferred Lattin Name	Common Name	Park Status	Residency	Nativity	Abundance
175182	Anatidae	Lophodytes cucullatus	Hooded Merganser	Probably Present	Migratory	Native	Occasional
175187	Anatidae	Mergus serrator	Red-breasted Merganser	Probably Present	Migratory	Native	Occasional
175789	Phasianidae	Bonasa umbellus	Ruffed Grouse	Probably Present	Vagrant	Native	Occasional
176221	Rallidae	Rallus limicola	Virginia Rail	Probably Present	Migratory	Native	Occasional
176242	Rallidae	Porzana carolina	Sora	Probably Present	Migratory	Native	Occasional
176567	Charadriidae	Pulvialis squatarola	Black-bellied Plover	Probably Present	Migratory	Native	Occasional
176506	Charadriidae	Charadrius semipalmatus	Semipalmated Plover	Probably Present	Migratory	Native	Occasional
176522	Charadriidae	Charadrius montanus	Mountain Plover	Probably Present	Unknown	Native	Occasional
176610	Scolopacidae	Bartramia longicauda	Upland Sandpiper	Probably Present	Migratory	Native	Occasional
176686	Scolopacidae	Limosa fedoa	Marbled Godwit	Probably Present	Migratory	Native	Occasional
176667	Scolopacidae	Calidris pusilla	Semipalmated Sandpiper	Probably Present	Migratory	Native	Occasional
176668	Scolopacidae	Calidris mauri	Western Sandpiper	Probably Present	Migratory	Native	Occasional
176656	Scolopacidae	Calidris minutilla	Least Sandpiper	Probably Present	Migratory	Native	Occasional
176655	Scolopacidae	Calidris bairdii	Baird's Sandpiper	Probably Present	Migratory	Native	Occasional
176653	Scolopacidae	Calidris melanotos	Pectoral Sandpiper	Probably Present	Migratory	Native	Occasional
554145	Scolopacidae	Calidris himantopus	Stilt Sandpiper	Probably Present	Migratory	Native	Occasional
176679	Scolopacidae	Limnodromus griseus	Long-billed Dowitcher	Probably Present	Migratory	Native	Occasional
176735	Scolopacidae	Phalaropus lobatus	Red-necked Phalarope	Probably Present	Migratory	Native	Occasional
176839	Laridae	Larus philadelphia	Bonaparte's Gull	Probably Present	Migratory	Native	Occasional
176829	Laridae	Larus californicus	California Gull	Probably Present	Migratory	Native	Occasional
176924	Laridae	Sterna caspia	Caspian Tern	Probably Present	Migratory	Native	Occasional
176959	Laridae	Chlidonias niger	Black Tern	Probably Present	Migratory	Native	Occasional
177849	Tytonidae	Tyto alba	Barn Owl	Probably Present	Migratory	Native	Occasional
178208	Picidae	Sphyrapicus thyroideus	Williamson's Sapsucker	Probably Present	Breeder	Native	Rare
178288	Tyrannidae	Tyrannus vociferans	Cassin's Kingbird	Probably Present	Migratory	Native	Occasional
179008	Vireonidae	Vireo cassini	Cassin's Vireo	Probably Present	Migratory	Native	Rare
179680	Corvidae	Cyanocitta cristata	Blue Jay	Probably Present	Migratory	Native	Occasional
179796	Muscicapidae	Catharus fuscescens	Veery	Probably Present	Migratory	Native	Occasional
178489	Motacillidae	Anthus spinoletta	American Pipit	Probably Present	Migratory	Native	Occasional
178855	Emberizidae	Vermivora peregrina	Tennessee Warbler	Probably Present	Migratory	Native	Occasional
178861	Emberizidae	Vermivora ruficapilla	Nashville Warbler	Probably Present	Migratory	Native	Occasional
178927	Emberizidae	Seiurus aurocapillus	Ovenbird	Probably Present	Migratory	Native	Occasional
178931	Emberizidae	Seirus noveboracensis	Northern Waterthrush	Probably Present	Migratory	Native	Occasional
179439	Emberizidae	Spizella pallida	Clay-colored Sparrow	Probably Present	Migratory	Native	Occasional
179462	Emberizidae	Zonotrichia albicollis	White-throated Sparrow	Probably Present	Migratory	Native	Occasional
179526	Emberizidae	Calcarius lapponicus	Lapland Longspur	Probably Present	Migratory	Native	Occasional
179532	Emberizidae	Plectrophenax nivalis	Snow Bunting	Probably Present	Migratory	Native	Occasional
179032	Emberizidae	Dolichonyx oryzivorus	Bobolink	Probably Present	Migratory	Native	Occasional
179109	Emberizidae	Quiscalus mexicanus	Great-tailed Grackle	Probably Present	Migratory	Native	Occasional

Appendix D. Management recommendations for Dinosaur National Monument birds listed as "High Priority" in The Colorado Partners in Flight (COPIF) Land Bird Conservation Plan (Beidleman 2000).

Aspen Habitat

Broad-tailed Hummingbird – This species is dependent upon flowering plants, forbs, and shrubs. Recommendations include managing livestock grazing to assure healthy populations of forbs and shrubs. Also, creation of small forest openings that stimulate forb and shrub development should benefit this species. Aspen stand invasion by conifers may result in declines in habitat quality by reducing abundance and diversity of flowering plants and reducing density of low shrubs and forbs.

Red-naped Sapsucker – These birds are dependent upon snags, and respond well to natural disturbances (fire, insect infestation) in forests. Recommendations include retaining aspen snags in forests, especially near riparian zones, water sources, and habitat edges, and maintaining at least 15 snags per 4 hectares.

Violet-green Swallow – Populations of these birds depend directly upon the availability of nest cavities. Decayed trees located in open areas, along forest edges, or in open-structured stands are beneficial. Recommendations include retaining all live cavity-bearing trees and all large diameter snags, and maintaining a minimum of 8-12 snags or live cavity-bearing trees per 4 hectares, especially those near water, riparian corridors, or stand edges. Broken trees are also valuable.

Cliff/Rock Habitat

Peregrine Falcon – This species nests on cliffs on the Colorado Plateau. Restriction of recreational activities near nest sites during the nesting period may be necessary. Recommendations include the establishment of buffer zones to minimize disturbances around nesting sites. Also, since Peregrine Falcons are vulnerable to herbicides and pesticides, their food sources should be monitored for these chemicals.

White-throated Swift – This species also nests on cliffs, and are vulnerable to disturbances due to recreational activities including hiking and rock climbing. Since this species diet consists almost entirely of insects, pesticide use should be monitored carefully.

Grassland habitat

Ferruginous Hawk – Control of prey species (ground squirrels and prairie dogs) has been shown to reduce Ferruginous Hawk populations. Recommendations include retaining populations of the primary prey species. Since Ferruginous Hawks are sensitive to disturbance at nest sites, activities within 0.8 km (0.5 mi) of active nests should be restricted.

Appendix D (continued).

Lowland Riparian Habitat

Lewis's Woodpecker – Lewis's Woodpeckers depend upon large trees and snags and are sensitive to disturbance at nest sites. Recommendations include reducing or eliminating activities that degrade the structure and quality of the riparian systems. Recreational facilities such as roads, trails and campgrounds should be located away from riparian areas. Competition with European Starlings for limited nest cavities may limit breeding success of this species in some areas. Finding ways to reduce competition from these non-native, unprotected birds would be beneficial.

Western Kingbird – Recommendations include reducing disturbances to the riparian areas that this species is dependent upon, locating recreational facilities such as roads, trails, and campgrounds away from riparian areas, and protecting plant species that attract large numbers of insect pollinators.

Mixed Conifer Habitat

Blue Grouse – This species prefers forests that are not dense, so maintaining open areas in forests may be important.

Mountain Shrub Habitat

Common Poorwill – Although little is known about this species' habitat requirements, restricting the clearing of shrubs and managing for dense stands of trees may be beneficial.

Virginia's Warbler – Recommendations include maintaining larger shrubs, especially Gambel's oak.

Piñon-Juniper Habitat

Black-chinned Hummingbird – Recommendations include maintaining healthy forb components in nesting and adjacent habitats to contribute to healthy nectar and insect food supplies. Hummingbirds are susceptible to pesticides and herbicides; chemical pest control programs should be avoided whenever possible.

Gray Flycatcher – Gray Flycatchers have relatively high tolerance for habitat disturbance, however, they require fairly large stands of woodland (greater than 1 hectare). Avoid management practices that result in fragmenting Piñon-Juniper stands into small patches.

Gray Vireo – Gray Vireo nests are succeptible to predation by jays, squirrels, and chipmunks, and to Brown-headed Cowbird parasitism. Recommendations include reducing predation and parasitism by limiting livestock grazing activities.

Appendix D (continued).

Pinyon Jay – These birds are dependent upon piñon seeds and juniper berries, of which most are produced by old trees. Recommendations include managing for large and old age-class trees for high piñon nut and juniper berry production. Also, since Pinyon Jays are secretive during the nesting season and will not nest near human activity, their nesting sites should be considered sensitive to human disturbances.

Juniper Titmouse – Titmice require mature piñon and juniper trees for foraging and nesting cover. Recommendations include managing for large size piñons and junipers.

Black-throated Gray Warbler – Since this species is common, it serves as an indicator of healthy Piñon-Juniper woodland and should be monitored for population changes that could identify problems for it as well as other species associated with this habitat.

Scott's Oriole – Scott's Oriole represents the needs of species in scattered, open juniper woodlands at the edge of desert shrubland. The species should be monitored for significant population changes that could identify problems for it as well as other species associated with this habitat. Brown-headed Cowbirds parasitize Scott's Oriole nests. Recommendations include reducing livestock grazing to reduce nest parasitism by Brown-headed Cowbirds. Also, Scott's Oriole's limited range suggests a need to limit recreation activities in scattered Piñon-Juniper habitats.

Ponderosa Pine Habitat

Mexican Spotted Owl – Mexican Spotted Owl is listed as a threatened species at both the federal and state levels. Loss of mature trees due to fire, especially in steep canyons and in riparian zones, is detrimental to this species. Prescribed burns outside of the breeding season can reduce the fuel load and lessen the potential for catastrophic fires. The Mexican Spotted Owl Recovery Team recommendations include protecting 240 hectares of habitat around each nest (U.S. Fish and Wildlife Service 1995).

Western Bluebird – As with all cavity-nesting species, loss of large trees and snags reduces nesting opportunities. Western Bluebirds and other bird species of open ponderosa pine forest also lose habitat as fire suppression practices allow the development of dense stands. Recommendations include restoring ponderosa pine forests to more historic conditions of large trees and snags, in clusters, with open, grassy understory.

Sage Shrubland Habitat

Greater Sage Grouse – The loss of sagebrush habitats through burning, herbicide applications, and excessive livestock grazing is detrimental to this species. Grass cover is important to nesting success. Recommendations include protecting existing sagebrush, and restoring relatively undisturbed wet meadows.

Appendix D (continued).

Brewer's Sparrow – This sparrow prefers large, contiguous sagebrush stands; the minimum acceptable stand size has not been determined but isolated stands of sagebrush smaller than 2 hectares are not likely to support Brewer's Sparrow. Recommendations include maintaining contiguous sagebrush stands of at least 12 hectares. Treatment of large areas of sagebrush with herbicides has been shown to cause individuals to abandon the treated areas, so herbicide use should be avoided. Fires that remove up to 50% of the sagebrush may result in a decline in local Brewer's Sparrow populations for 1-2 years, but populations should be able to rebound (Petersen and Best 1985).

Sage Sparrow – Sage Sparrows prefer large patches of sagebrush, and may need patches of continuous habitat of at least 130 hectares. Maintenance of large areas of mature sagebrush habitat is recommended.

Semi-desert Shrubland Habitat

Burrowing Owl – Programs to control principal prey species (grasshoppers, crickets, beetles) are detrimental to Burrowing Owl populations, as the insecticides have direct and indirect effects on the birds. Recommendations include avoiding the use of insecticides near Burrowing Owl colonies. Also, control of prairie dogs and ground squirrels, upon which the owls are dependent for burrows, has a negative impact on Burrowing Owl populations and should be avoided.

Loggerhead Shrike – Greasewood and stands of large sagebrush are valuable to this species. Discouraging the conversion of this habitat is recommended. Wildfires are a significant threat to Loggerhead Shrikes in their Semi-desert Shrubland habitat. Full suppression of wildfires in this habitat is recommended. Also, since a large percentage of this species diet consists of insects, the use of insecticides in Semi-desert Shrubland habitats should be avoided.

Horned Lark – Horned Larks require low-stature vegetation in relatively large habitat patches. The conversion of native grassland to agriculture is detrimental to this species. Programs to control the principal prey species (grasshoppers, crickets, beetles) are also detrimental to Horned Larks, as the insecticides have direct and indirect effects on the birds. The use of insecticides over large expanses of land should be avoided.

Appendix E. Point counts and transects conducted in Dinosaur National Monument and their locations, dates, and observers.

Transect or Point Count ID	Location	Date	Observer
AS001-009	Zenobia Peak	24-Jun-02	Glenn Giroir
AS010	Deerlodge Park	24-Jun-02	Glenn Giroir
GR010	Island Park	24-May-02	Glenn Giroir
GR013	Harper's Corner	19-May-02	Mike Henwood
GR017	Sand Canyon	18-May-02	Glenn Giroir
GR022	Billiard Table	18-May-02	Glenn Giroir
GR031	West Cactus Flat	17-May-02	Mike Henwood
GR032	East Cactus Flat	25-May-02	Mike Henwood
GR042	Zenobia Basin	16-May-02	Mike Henwood
GR043	East Cactus Flat	25-May-02	Mike Henwood
GR044	Zenobia Basin	16-May-02	Glenn Giroir
MC001-002	Canyon Overlook	27-May-02	Glenn Giroir
MC003-010	Whirlpool Canyon Cliffs	30-May-02	Glenn Giroir
MC011	Echo Park Overlook	30-May-02	Glenn Giroir
MC012-017	Harper's Corner Trail	30-May-02	Glenn Giroir
MC018-027	Sand Canyon	31-May-02	Glenn Giroir
MC028	Sand Canyon	31-May-02	Glenn Giroir
MC029-033	Jones Hole Canyon	1-Jun-02	Glenn Giroir
MC034-036	Baker Cabin	2-Jun-02	Glenn Giroir
MC037-051	Snow Ranch	3-Jun-02	Glenn Giroir
MC052	Iron Springs Overlook	3-Jun-02	Glenn Giroir
MC053-054	Gates of Lodore	5-Jun-02	Glenn Giroir
MC055-056	Zenobia Peak	6-Jun-02	Glenn Giroir
MC057-060	Jack Springs Draw	7-Jun-02	Glenn Giroir
NT001-015	Mantle Ranch Road -- East	24-May-02	Glenn Giroir
NT016-035	Mantle Ranch Road -- Central	23-May-02	Glenn Giroir
NT036-042	Mantle Ranch Road -- West	23-May-02	Mike Henwood
NT043-052	Echo Park	17-May-02	Glenn Giroir
NT053-056	Harper's Corner	18-May-02	Mike Henwood
NT057-060	Gates of Lodore	19-May-02	Mike Henwood
PJ001	Split Mountian Gorge	29-May-01	Cameron Cox
PJ002	Blue Mountain Road	29-May-01	Glenn Giroir
PJ003	Snow Ranch	5-Jun-01	Glenn Giroir
PJ004	Trail Draw	22-May-01	Glenn Giroir
PJ005	Red Rock Bench	22-May-01	Cameron Cox
PJ006	Bull Canyon	24-May-01	Mike Henwood
PJ007	Johnson Canyon	24-May-01	Glenn Giroir
PJ008	Haystack Rock	23-May-01	Glenn Giroir
PJ009	East Cactus Flat	23-May-01	Cameron Cox
PJ010	Disappointment Draw	24-May-01	Cameron Cox
PJ011	Vivas Cake Hill	28-May-01	Glenn Giroir
PJ012	Tepee Draw	26-May-01	Glenn Giroir
PJ013	Browns Draw	26-May-01	Mike Henwood
PJ014	Lake Bench	24-May-01	Glenn Giroir
PJ015	Iron Mine Basin	25-May-01	Mike Henwood
PJ016	Gates of Lodore	25-May-01	Cameron Cox
PJ017	Jack Springs Draw	26-May-01	Cameron Cox
PJ018	Warm Springs Cedars	6-Jun-01	Cameron Cox
PJ019	Jones Hole Trail	27-May-01	Cameron Cox

Appendix E (continued).

Transect or Point Count ID	Location	Date	Observer
PJ020	Red Wash	27-May-01	Glenn Giroir
PJ021	Starvation Valley	6-Jun-02	Glenn Giroir
PP001-011	Zenobia Basin	16-May-02	Glenn Giroir
PP012-015	Gates of Lodore	5-Jun-02	Glenn Giroir
RR001-010	Yampa River Miles 1-10	11-Jun-01	Coen Dexter
RR011-020	Yampa River Miles 11-20	10-Jun-01	Glenn Giroir
RR021-046	Yampa River Miles 21-46	9-Jun-01	Glenn Giroir
RR207-218	Green River Miles 207-218	12-Jun-01	Coen Dexter
RR219-225	Green River Miles 219-225	11-Jun-01	Coen Dexter
RR226-234	Green River 226-234	23-Jun-02	Glenn Giroir
RR235-243	Green River 235-243	22-Jun-02	Glenn Giroir
RC001	Deerlodge Park	18-Jun-01	Glenn Giroir
RC002	Gates of Lodore	18-Jun-01	Glenn Giroir
RC003	Echo Park	20-Jun-01	Glenn Giroir
RC004	Whispering Cave	20-Jun-01	Glenn Giroir
RC005	Chew Ranch	20-Jun-01	Glenn Giroir
RC006	Cub Creek	20-Jun-01	Glenn Giroir
RC007	Cub Creek	20-Jun-01	Glenn Giroir
RC008	Green River Campground	20-Jun-01	Glenn Giroir
RC009	Rainbow Park	20-Jun-01	Glenn Giroir
RC010	Jones Hole Canyon	21-Jun-01	Glenn Giroir
RC011	Jones Hole Canyon	21-Jun-01	Glenn Giroir
RC012	Jones Hole Canyon	21-Jun-01	Glenn Giroir
RC013	Jones Hole Canyon	21-Jun-01	Glenn Giroir
RC014	Jones Hole Canyon	21-Jun-01	Glenn Giroir
RC015	Harding Hole River Campground	10-Jun-01	Glenn Giroir
RC016	Laddie Park River Campground	11-Jun-01	Glenn Giroir
SA004	Green River Campground	24-May-02	Glenn Giroir
SA005	Red Wash	24-May-02	Mike Henwood
SA011	Ruple Point	19-May-02	Glenn Giroir
SA012	Ruple Point Trail	19-May-02	Glenn Giroir
SA014	Snow Ranch	19-May-02	Mike Henwood
SA015	Echo Park Overlook	19-May-02	Mike Henwood
SA016	Vivas Cake Hill	18-May-02	Mike Henwood
SA018	Disappointment Draw	25-May-02	Glenn Giroir
SA019	Echo Park Road	18-May-02	Mike Henwood
SA021	Mantle Ranch Road	18-May-02	Glenn Giroir
SA023	Red Rock Bench	18-May-02	Glenn Giroir
SA024	Hells Canyon	17-May-02	Glenn Giroir
SA025	Harding Hole Overlook	17-May-02	Glenn Giroir
SA026	Baker Cabin	17-May-02	Glenn Giroir
SA027	Baker Cabin	17-May-02	Glenn Giroir
SA028	Mantle Ranch Road	17-May-02	Glenn Giroir
SA029	Mantle Ranch Road	17-May-02	Mike Henwood
SA030	Haystack Rock	17-May-02	Mike Henwood
SA033	Disappointment Draw	25-May-02	Glenn Giroir
SA034	Iron Mine Basin	15-May-02	Glenn Giroir
SA035	Iron Mine Basin	15-May-02	Glenn Giroir
SA036	Iron Mine Basin	15-May-02	Mike Henwood
SA037	Iron Mine Basin	15-May-02	Mike Henwood

Appendix E (continued).

Transect or Point Count ID	Location	Date	Observer
SA038	Iron Mine Ridge	16-May-02	Glenn Giroir
SA039	Iron Mine Ridge	16-May-02	Mike Henwood
SA040	Green River Slope	16-May-02	Glenn Giroir
SA041	Zenobia Basin	16-May-02	Mike Henwood
SA047	Cub Creek	13-May-02	Glenn Giroir
SA049	Deerlodge Park	25-May-02	Glenn Giroir
SA050	Billiard Table	18-May-02	Glenn Giroir
SE001	Quarry Entrance Station	14-May-02	Glenn Giroir
SE002	Quarry Entrance Station	14-May-02	Glenn Giroir
SE003	Quarry Entrance Station	14-May-02	Glenn Giroir
SE006	Rainbow Park	24-May-02	Glenn Giroir
SE007	Rainbow Park	24-May-02	Mike Henwood
SE008	Rainbow Park	24-May-02	Glenn Giroir
SE009	Island Park	24-May-02	Glenn Giroir
SE020	Mantle Ranch Road	18-May-02	Glenn Giroir
SE045	Gates of Lodore	23-May-02	Glenn Giroir
SE046	Gates of Lodore	23-May-02	Glenn Giroir
SE048	Morris Ranch	13-May-02	Glenn Giroir

Observers:

Cameron Cox – Cameron Cox has been birding since 1993 and is especially skilled at bird vocalizations. He has participated in the Great Texas Birding Classic competition for seven consecutive years, winning the youth division several times, winning first place in the adult competition in 2001, and winning second place in 2000 and 2002. He has worked as a biologist at Cape May, New Jersey, in western Pennsylvania, and offshore in Texas and Louisiana. In 2002 he was chosen to be a fieldtrip leader for the Lower Rio Grande Valley Birding Festival. Cameron worked for RMBO during the spring and summer of 2001 when he conducted transects in Dinosaur National Monument and throughout Colorado.

Coen Dexter – In 1999 Coen Dexter retired as a High School chemistry and physics teacher in Grand Junction. He has a masters degree in nuclear physics. Since retiring, he has worked seasonally for RMBO conducting transects. Coen is well known as an expert in the birding community, particularly in northwest Colorado. He has led bird ecology trips in Mexico, South America, Australia, and New Zeeland. He is currently working on a book, Birds of Western Colorado: Plateau and Mesa Country, to be published in 2003. He has worked numerous years as a rafting guide, and has rafted the Yampa and Green rivers through Dinosaur National Monument numerous times. He supplied all gear and served as trip leader during the rafting transects.

Glenn Giroir – Glenn Giroir became a full-time employee of RMBO in 1998. He has a bachelor degree in biology. At RMBO, he works in both research and education. He has worked as a bird bander for five years, and currently supervises RMBO's Grand Junction education and bird banding station. He also works on RMBO's Monitoring Colorado's Birds Program, conducting transects throughout the state. His bird monitoring and research projects have included a Gray and Plumbeous vireo habitat utilization study at Colorado National Monument, bird inventories at Colorado and Dinosaur National Monuments, and currently, a bird inventory at Black Canyon National Monument and Curecanti National Recreation Area.

Mike Henwood – In 2000, Mike Henwood retired as a Middle School Principle in Grand Junction. Mike holds a masters degree in math and administration/education. Since retiring, he has worked seasonally for RMBO conducting transects. Mike is a native of western Colorado and has been birding there since he was a young boy. He is an active member of the Grand Valley Audubon Society (GVAS), serving as president from 2000-2001. He leads several bird fieldtrips for GVAS each year, and coordinates a bird monitoring project on the Bureau of Reclamation's Grand Junction area properties. He has also worked throughout the state on the Colorado Breeding Bird Atlas Project.